

The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.



OPTIMAL PRICING FOR NATIONAL PARK ENTRANCE FEES IN ZAMBIA

**A THESIS SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTERS OF ECONOMICS WITH SPECIALISATION IN DEVELOPMENT**

OF

THE UNIVERSITY OF CAPE TOWN

BY

LYDIA MWELWA CHIKUMBI

FEBRUARY 2013

SUPERVISOR: PROF EDWIN MUCHAPONDWA

ABSTRACT

Protected area management represents Zambia with opportunities for attracting foreign exchange and improving economic growth and development. The challenge however, is for stakeholders to exploit avenues that can maximise its revenue for efficient management. This study seek to investigate whether the optimal entrance fees for Zambia's national parks with particular focus on the four most popular parks namely South Luangwa, Mosi-oa-tunya, Lower Zambia, and Kafue are optimal. This study collects data from tourists which it then uses to estimate the parks visitation demand functions, the price and income elasticities. Using price elasticity estimates, optimal conservation fees are estimated. The study employs the contingent behaviour approach to elicit park visitors' behaviour in response to changes in entrance fees. This is done for both actual and hypothetical scenarios. The study reveals that demand elasticities estimated at the four parks are fairly different, demonstrating the heterogeneity characterizing both tourist behavior and park attraction and amenities. The cross price elasticity that was estimated showed that substitutability in visitation demand existed in all the four parks. This entails that increasing price at one park can effectively influence tourists to move from that park to another. The study findings also indicate that tourists are willing to pay (WTP) higher prices ranging between \$50 and \$61.85 for the four parks. The study established that the current prices set-up at the four parks is not optimal. ZAWA could experiment with a price increase of upto US\$213.88 for South Luangwa, US\$44.71 for Mosi-oa-tunya, US\$51.69 for Lower Zambezi and \$58.75 for Kafue national park.

TABLE OF CONTENTS

ABSTRACT	i
TABLE OF CONTENTS	ii
LIST OF TABLES.....	v
LIST OF FIGURES.....	vi
ACKNOWLEDGEMENTS	vii
DEDICATION	viii
DECLARATIONS	ix
LIST OF ABBREVIATIONS AND ACRONYMS.....	x
CHAPTER 1: INTRODUCTION.....	1
1.1 Background of study	1
1.2 Tourism Sector in Zambia.....	3
1.3 Revenue and Pricing Policy Structure of ZAWA.....	6
1.3.1 Revenue Activities.....	6
1.3.2 ZAWA Pricing Policy and Structure.....	7
1.4 Statement of the Problem.....	10
1.5 Study Objectives	12
1.6 Study Question.....	13
1.7 Significance of Study.....	13

1.8 Limitations of Study.....	15
1.9 Organization of Study.....	15
CHAPTER 2: BACKGROUND OF NATIONAL PARKS IN ZAMBIA.....	17
2.1 Evolution of Wildlife Management.....	17
2.2 Zambia Wildlife Authority (ZAWA).....	21
2.2.1 ZAWA Management Structure.....	22
2.2.2 ZAWA Conservation Partners.....	24
2.3 Study Area Description.....	25
CHAPTER 3: LITERATURE REVIEW	31
3.1 Theoretical Literature Review	31
3.1.1 Rationale of Park Pricing	31
3.1.2 Monopoly and Price Discrimination.....	34
3.1.3 Approaches to Non-Market Valuation.....	39
3.2 Empirical Literature Review	42
CHAPTER 4: METHODOLOGY	51
4.1 Model Specifications.....	51
4.1.1 Factors that determine Visitation Demand	53
4.2 Estimation Procedures	57
4.2.1 Research Design.....	57
4.2.2 Choice of Study Area.....	58
4.2.3 Target Population.....	58

4.2.4 Sample Size and Sampling procedure.....	58
4.2.5 Research Instrument.....	60
4.2.6 Validity of Data	64
4.2.7 Data Reliability	65
4.2.8 Data Analysis techniques.....	66
4.3 Tobit model and Marginal Effects specifications.....	67
4.4 Optimal Pricing Model.....	69
CHAPTER 5: EMPIRICAL RESULTS	71
5.1 Socio-Demographic Attributes of the Sample Surveyed.....	72
5.1.1 Respondents' Country of Origin.....	72
5.1.2 Gender of Respondents	72
5.1.3 Age Distribution of Respondents.....	72
5.1.4 Respondents' Education Level	74
5.1.5 Respondents' Occupation.....	75
5.2 Estimation Results of the Panel Tobit Regression Model.....	76
5.3 Demand Elasticities of Park Visitation.....	78
5.4 Optimal Entrance Fee and Policy	79
5.5 Selected Summary of Descriptive Statistics.....	81
CHAPTER 6: CONCLUSION AND RECOMENDATION.....	84
REFERENCE.....	87
APPENDICES.....	100

LIST OF TABLES

Table 1.1. Tourism Sector Performance (2000-2010).....	4
Table 1.2. Price List 2009-2010 for ZAWA.....	10
Table 4.1. Summary of Dependent and Independent Variables and their Expectations.....	57
Table 4.2. Structure of Questionnaire.....	61
Table 4.3. Scenario 1, actual entrance fee.....	62
Table 4.4. Scenario 2, hypothetical entrance fee of \$50.....	62
Table 4.5. Scenario 3, hypothetical entrance fee of \$20.....	63
Table 4.6. Scenario 4, hypothetical entrance fee of \$50.....	63
Table 4.7. Scenario 5, hypothetical entrance fee of \$40.....	63
Table 5.1. Distribution of Respondents at the Four Parks.	70
Table 5.2. Estimated Results of Tobit Regression Model.....	77
Table 5.3. Estimated Elasticities of Park Visitation Demand.....	79
Table 5.4. Optimal Park Revenue.....	81
Table 5.5. Summary of Selected Results for International Tourists (Mean Values).....	83

LIST OF FIGURES

Figure 1.1. Breakdown of Tourism Revenue.....	6
Figure 1.2. Revenue-Cost Trends.....	8
Figure 1.3. Park Contribution of Total Income.....	9
Figure 1.4. Government and Donor Funding.....	11
Figure 2.1. Zambia National Parks and Management Areas.....	19
Figure 3.1. Price Discrimination in Market A and B.....	38
Figure 5.2. Age Distribution of Respondents	73
Figure 5.3. Respondents by Level of Education.....	75
Figure 5.4. Respondents Occupation.....	76

ACKNOWLEDGEMENTS

Sincere thanks to the lecturers and staff at the University of Cape Town for their input and assistance in the completion of this master's program. I am indebted to my supervisor Associate Professor Edwin Muchapondwa for his commitment, professional guidance and enduring interest in my study. I am only beginning to appreciate how much insight I gained under his supervision.

Many thanks are also due to Professor Brian Levy for his observant comments during the class presentation on ZAWA, Professor Mike Morris for his personal efforts and understanding in providing insight into academic writing during the last days of the program.

I pay special tribute to my husband, Marshal and my precious children, Marchelyn and Clive for their encouragement and patience with a wife and Mother who often 'go missing' because of her studies.

Many thanks to Eleonah Kapapa, a friend who has been around through thick and thin – endured the anxiety and pressure in meeting sample targets during the survey in the parks. I will always be indebted to her. Fellow students, Jackson, Jessica and Johane for their valuable input during my study. And special thanks go to ZAWA at Chilanga for allowing me to conduct research at their respective parks in different regions of the country-Zambia. I can only wish everyone the very best in life. May the almighty God bless them.

DEDICATION

I dedicate this study to my children Marchelyn and Clive so they may be inspired to achieve even more in future.

University of Cape Town

DECLARATIONS

I, Lydia Mwelwa Chikumbi, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work or part of it has not been submitted for a degree in any other institution of higher education.

No part of this thesis may be reproduced, stored in any retrieval system, or transmitted in any manner or form, or by means without the prior permission of the author, or The University of Cape Town in that behalf.

I, Lydia Mwelwa Chikumbi, grants the University of Cape Town the right to reproduce this thesis in whole or in part, in any manner or format, which the University may deem fit, for any person or institution requiring it for study and research; providing that the University of Cape Town shall have waived this right if this thesis has been or is being published in a manner satisfactory to the university.

Signature.....

Date.....

Lydia Mwelwa Chikumbi

LIST OF ABBREVIATIONS AND ACRONYMS

ADMADE	Administrative Management Design for Game Management
AWF	Africa Wildlife Foundation
CBA	Contingent Behavioral Approach
CBNRM	Community Based Natural Resource Management
CHA	Control Hunting Area
CLZ	Conservation Lower Zambezi
CONASA	Community Based Natural Resource Management and Sustainable Agriculture
CBNRM	Community Based Nature Resource Management
CRB	Community Resource Board
CSO	Central Statistical Office
CVM	Contingent Valuation Methodology
ECZ	Environmental Council of Zambia
FZC	Frankfurt Zoological Society
GDP	Gross Domestic Product
GMA	Game Management Area
GRZ	Government of the Republic of Zambia
IIED	International Institute for Environment and Development
IMF	International Monetary Fund
IUCN	International Union for the Conservation of Nature
MTENR	Ministry of Tourism, Environment and Natural Resources
NGO	Non-Governmental Organization

NORAD	Norwegian Agency for international Development
NPWS	National Parks and Wildlife Service
NRDC	Nature Resources Defense Council
PHAZ	Professional Hunters Association of Zambia
PPP	Public-Private Partnership
REMNPAS	Reclassification and Effective Management of National Park Area System
SADC	Southern Africa Development Community
SEED	Support for Economic Expansion and Diversification
SHOAZ	The Safari Hunters Operators Association of Zambia
SLAMU	South Luangwa Management Unit
SLCS	South Luangwa Conservation Society
SLNP	South Luangwa National Park
TCM	Travel Cost Method
UNDP	United National Development Programme
WCS	Wildlife Conservation Society
WECSZ	Wildlife Environmental Conservation Society of Zambia
WPAZ	Wildlife Producers Association of Zambia
WTA	Willingness to Accept
WTP	Willingness to Pay
WTTC	World Trade and Tourism Council
WWF	World Wide Fund for Nature
ZAWA	Zambia Wildlife Authority

CHAPTER 1: INTRODUCTION

1.1 Background of study

Protected areas are recognized by IUCN (1994) as areas: "of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means". Protected areas (PAs) are a haven of biodiversity conservation. They ensure the continued flow of ecosystem services, such as the provision of clean water and the protection of soil resources. Protected Areas are known to contribute to spiritual, mental and physical well-being of humanity. They provide significant economic benefits to nations as whole and surrounding communities in particular. According to the UN Millennium project management (2000), one sixth of the world's population largely depend on protected areas for their livelihoods. Protected Areas such as national parks and heritage sites are designed to promote continuity and existence of life and cultural legacy.

National parks are thought of as the best way to preserve wildlife. These areas have been seen as "pristine environments similar to those that existed before human interference, delicately balanced ecosystems that need to be preserved for our enjoyment and use and that of future generations" (Gómez-Pompa and Kaus, 1992). These areas are treasured in modern societies due to their vast biodiversity that house unique species. Despite the significant economic and non-economic values of national

parks, their importance remains poorly understood and greatly undervalued. As a result national parks, in many instances, do not receive adequate financing or resources, making their effective management a challenging task.

Many park agencies in southern Africa are faced with the challenge of managing parks on limited budgets. This challenge exists not only in low-income countries, but also in some of the World's richest. As noted by the World Wildlife Fund in (Lindberg, 1991), most Protected Areas are "under-resourced and poorly managed, offering little in the way of real protection."

In Zambia, the use of national park recreation areas and facilities has grown at a greater rate than the funding available for maintaining, refurbishing, and improving these areas and facilities. A growing demand for public services, combined with government budget cutbacks means Zambia Wildlife Authority (ZAWA) must search for other sources of revenue beyond government grants to sustain their activities. Typically ZAWA generate only small revenue flows, leading to serious financial constraints. The vicious cycle of low revenue and weak government budget allocation leads to inadequate management.

This study seeks to investigate whether entrance fees for Zambia national parks are optimal. Using an economic model, the study discusses how price discrimination and differentiation techniques will give an alternative to ZAWA to maximise revenue collected through park entrance fees. The study will also provide additional background on how other developing countries have tempted to generate revenue for Protected Area welfare management. It should be stressed, however, that though the focus of this

study is on entrance fees, this is only one way for tourism to contribute to the management of national parks in Zambia.

1.2 Tourism Sector in Zambia.

The national parks of Zambia form the backbone of the tourism industry. It accounts for over 75 % of total tourism earnings in Zambia (ZAWA, 2008). The country offers excellent wildlife viewing in its 19 unique and less crowded parks. Situated in the Mosi-oa-tunya parks is the Victoria Falls 'one of the seven wonders of the world' the largest waterfall in the world, is the topmost tourist attraction in Zambia. The next most popular attraction is South Luangwa national park in Eastern Province, followed by Lower Zambezi and Kafue national parks. Different stakeholders are responsible for the management of the national parks and its wildlife. Besides ZAWA which retains the overall responsibility, non-governmental organisations (NGOs), business partners and local community institutions are also involved in the protection of wildlife.

Wildlife in the Protected Areas' of Zambia is the main tourist attraction with 85% natural based. However, the level of tourism development is very low compared to other countries in the region. In 2011, the sector only contributed a total GDP share of 5% compared with South Africa 8.6%, Botswana 6.5%, Namibia 20.3%, Zimbabwe 11.7%, and Malawi with 6.1% (WTTC, 2012). The sector has potential to improve considering the peace and vast landscape that the country possesses. A lack of infrastructure development such as roads and airports hinders movements of tourists

between Livingstone in southern province (Victoria Falls) and other parks of interests in the country. Another setback to the development of the sector is the extreme seasonality of Zambia's holiday tourism. The rainy season which extends upto six months a year, makes it impossible for tourists to move from one place to another due to poor road infrastructure and lack of airports. Development in the sector is further constrained by inadequate capital, lack of trained personnel, poorly developed marketing at the national level and limited policy, poor legislation and planning for the sector (Hamilton et al, 2007).

Zambia's tourism sector has been steadily growing over the years in terms of arrivals contributing a total GDP of 5% in 2011 and is forecast to rise by 7% in 2012 (WTTC, 2012). The industry contributes about 3.7% of total employment (58,000 jobs) in Zambia. The figure is expected to rise by 2% in 2012. The number of tourists coming to the country has grown from about 457,000 in 2000 to around 815,000 in 2010 - giving an average growth rate of 15.9% in 2010 (WTTC, 2012). Table 1.1 shows a decade trend analysis. The negative annual percentage of 2008 and 2009 is attributed to the global financial crisis causing a decline in the visitor arrivals.

Table 1.1. Tourism Sector Performance (2000-2010)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total number of arrivals	457,000	492,000	565,000	413,000	515,000	669,000	757,000	897,000	812,000	710,000	815,000
Total annual percentage growth of arrivals		7.7	14.8	-26.9	24.7	29.9	13.2	18.5	-9.5	-12.6	14.8

Source: prepared by author using statistics from World Bank. 2012

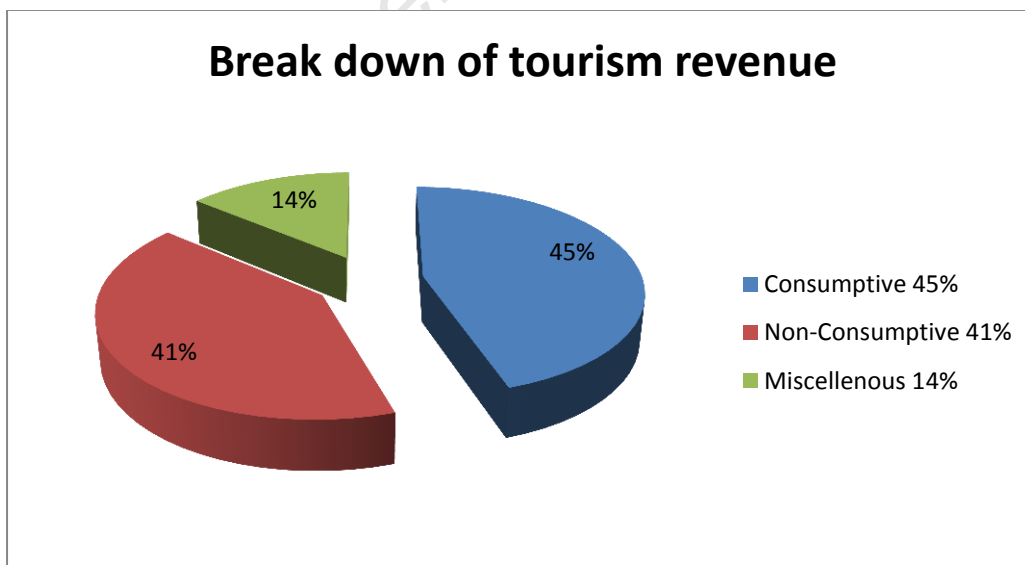
Zambia's tourist average growth rate of 15.9 per cent in 2010 was higher than the 8% for Africa and 9% for Sub Sahara Africa (Zambia tourism profile, 2011). However, the sector is known to operate below capacity prompting the government to give it priority to improve. In its strategy for economic growth and poverty reduction, the government of the republic of Zambia has included tourism as one of the key sectors to combat poverty giving it a prominent place. It intends to improve the sector through investing in infrastructure and tourism facilities; diversifying tourism products beyond its current heavy focus on wildlife; enhancing human resources through training; restocking of species with declining populations; and encouraging the participation of communities as business partners. The government envisions the country as a "major tourism destination of choice with unique features, which contributes to sustainable economic growth and poverty reduction by 2030" (Government of the Republic of Zambia, 2006). Zambia's tourism sector aims to raise the number of international visitors from 815,000 thousand in 2010 to more than two million by 2015 (World Bank, 2006). Tourism sector through national parks provides Zambia an opportunity to make the most of its competitive advantage.

1.3 Revenue and Pricing Policy Structure of ZAWA

1.3.1 Revenue Activities

As an autonomous body, ZAWA is expected to generate its own revenue to finance its mandate. The agency receives less than U\$1 million funding from the government per annum. Most of its revenue is generated through consumptive and non-consumptive tourism. The main source of revenue from consumptive tourism is generated through hunting concession fees – generating a total revenue contribution of 45%. Non-consumptive tourism includes mostly park entry fees and fixed leasehold fees contributing approximately 41% of the total revenue¹. Figure 1.1. Illustrates the revenue contributions of tourism activities.

Figure 1.1. Breakdown of Tourism Revenue



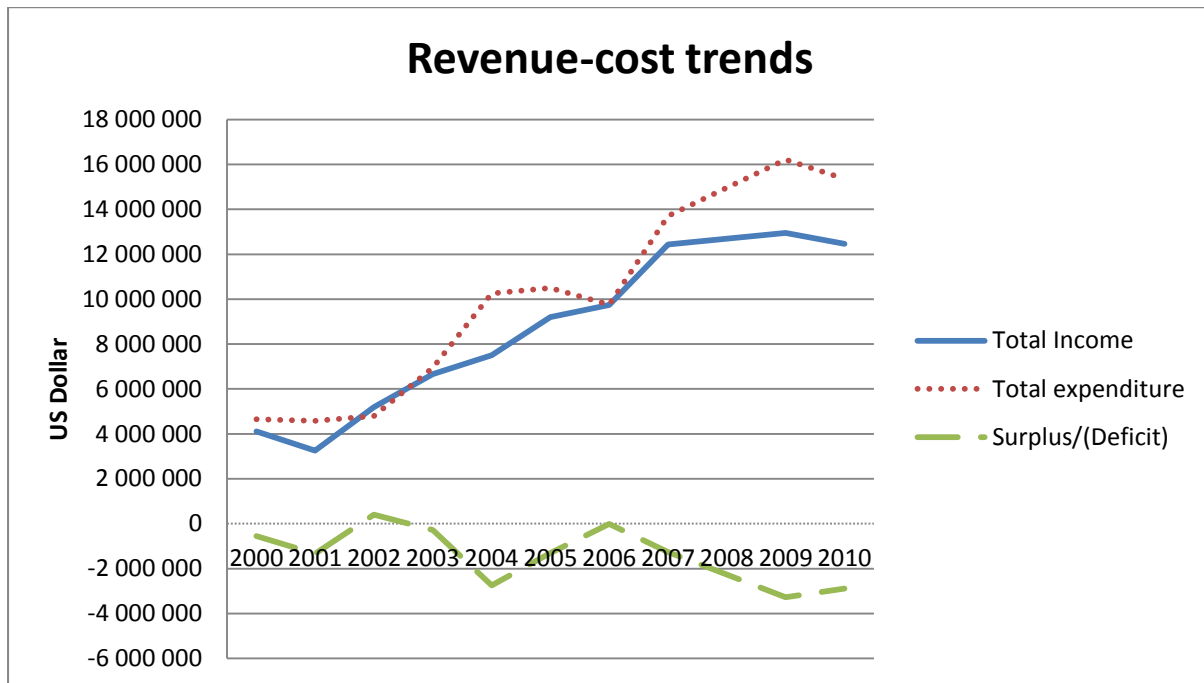
Source: Elaborated with data from ZAWA (2010)

¹ A report presented by ZAWA Commercial Manager, 2010

1.3.2 ZAWA Pricing Policy and Structure

Pricing of park products has been one of the major impediments to growth of the tourism sector in Zambia. The current pricing systems have not been sufficient to achieve the conservation level of nature as required by the sector. The pricing policies are not able to either restrict tourism to parks' carrying capacity or maximize on revenues generated. There is the lack of incentives to motivate local communities and nature users in general, to adopt behaviors acquiescent with nature sustainable uses. A financially constrained ZAWA has found it difficult to improve personnel welfare and to boost morale and vigor for service delivery. Zambia has been perceived to be subsidizing tourism exports to richer countries resulting in failure to reach financial sufficiency. Upgrading of infrastructure in the parks has been delayed while recruitment and replacement of park rangers has been weak. The latter, jeopardizes both the security of visitors at the parks and policing against poaching of wildlife. The total revenue generated cannot meet operational costs. This confirms why ZAWA has experienced deficits since its establishment in the year 2000 (See the revenue-cost trends over the years in figure 1.2). These shortcomings have had a major impact on conservation and the tourism industry as a whole.

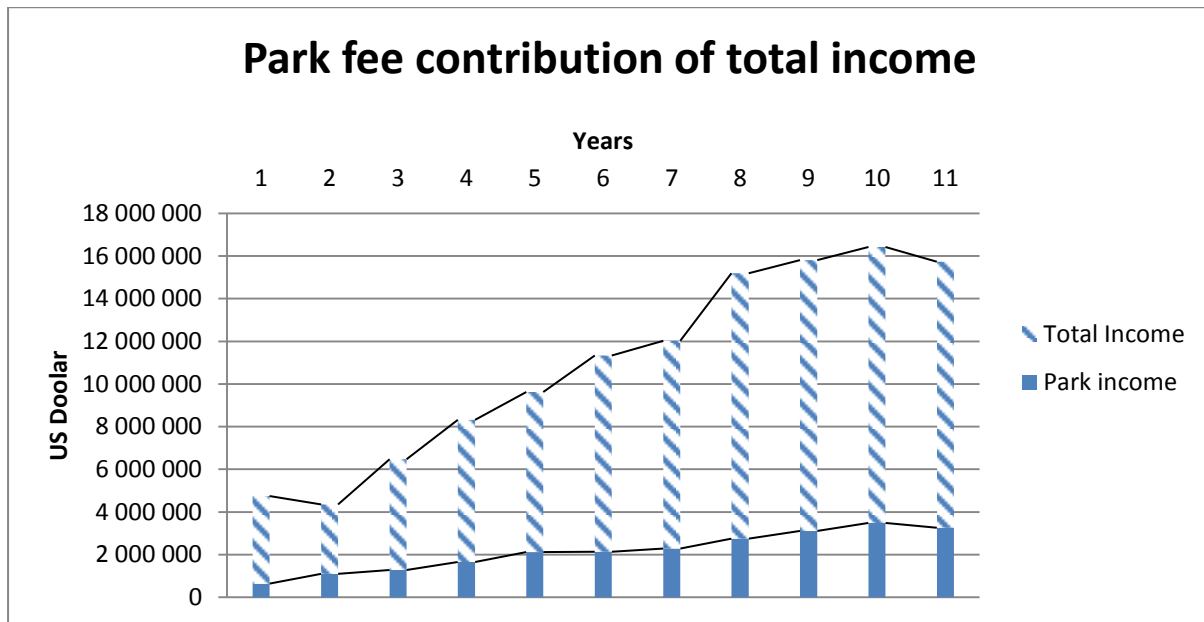
Figure 1.2. Revenue-Cost Trends



Source: Elaborated with data from ZAWA (2010)

The examination of current pricing strategy shows that ZAWA administers a tariff system established largely through consultations and bargaining with the industry stakeholders. By and large, the institution imitates what is prevailing in neighboring countries like South Africa, Zimbabwe, Botswana and Namibia. The current tariff system has provision for park entry, special activities within the park such as game drives, photographic safari and film making, surfing and camping. The park entry fee accounts for merely 30% of internally generated revenue while user charges and lodge leases account for the balance (ZAWA, 2010). Figure 1.3 below demonstrates the contribution of park entrance fee against total income generated.

Figure 1.3. Park Fee Contribution of Total Income



Source: Elaborated with data from ZAWA (2010)

The prices are structured to take into account park categorization, as well as visitors' differentiation (authors' personal communications with ZAWA commercial Manager). ZAWA has applied various forms of price discrimination and differentiation - discrimination by immigration status (i.e. Citizen, Residents/SADC and international). The parks are categorized based on park visitation, location and park attractions. Table 1.2 below show ZAWA's 2009-2010 pricelist. There has never been a formal pricing methodology to determine entry fees since ZAWA started operations as an autonomous body. The entry fee to the park has only been reviewed once in 2007. Even with the change, it is not clear how the relationship between entry fee and visitation evolves. However, plans were underway to effect another price change in 2012 (author personal communications with ZAWA commercial Manager). Park entry fees remain the most

significant avenue for revenue generation that ZAWA can exploit to attain financial self-sufficiency.

Table 1.2. Price List 2009-2010 for ZAWA (Exchange rate US\$1= ZMK 4797.1)

National Parks	Citizens (ZMK)	Residents/SADC Nati	International (US\$)	Self Drives US\$
Category A				
South Luangwa	25,020/Person/day	20/Person/day	25/Person/day	30/Person/day
Lower Zambezi	25,020/Person/day	20/Person/day	25/Person/day	30/Person/day
North Luangwa	20,160/Person/day	15/Person/day	25/Person/day	25/Person/day
Mosi-o-tunya	15,120/Person/day	2/Person/day	10/Person/day	15/Person/day
Category B	Citizens (ZMK)	Residents/SADC Nati	Non-Residents(US\$)	
Kafue	20,160/Person/day	15/Person/day	20/Person/day	
Lochnivar	15,120/Person/day	7/Person/day	10/Person/day	
Sumbu	15,120/Person/day	7/Person/day	10/Person/day	
Kansanka	15,120/Person/day	7/Person/day	10/Person/day	
Luambe	25,920/Person/day	10/Person/day	15/Person/day	
West Lunga	15,120/Person/day	5/Person/day	10/Person/day	
Blue Lagoon	15,120/Person/day	5/Person/day	10/Person/day	
Category C				
Other Parks	10,080/Person/day	12,600/Person/day	5/Person/day	
Category D				
School Parties	5,040/student/day	6,300/student/day	5s/Person/day	

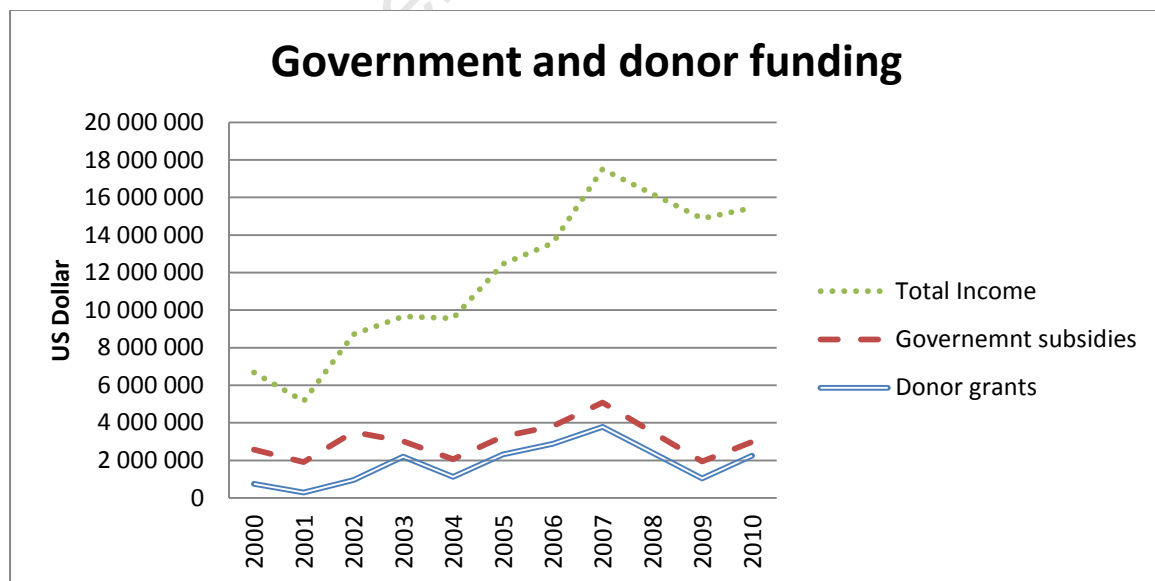
Source: Prepared by author using ZAWA's price list. Park fees, ZAWA (2010)

1.4 Statement of the Problem

Zambia Wildlife Authority is tormented by financial difficulties brought about by diminishing levels of visitation, unfunded infrastructure repair and development, and rising operating costs, to name a few. Information on the financial status of the organization from annual reports for the ten years (2001-2010) that were monitored

show the disturbing magnitude of the difficulties being faced by the organization. The review confirms serious financial constraints. Since ZAWA started its operations, the government has come to its aid through subsidies, initially with US\$2 million for the first two years and by 2010 the amount diminished to less than US \$600,000. Figure 1.4. below shows government and donor funding over the years. A closer look at the annual financial reports (2001-2010) reveals that, while the operational costs have been increasing, the amount of revenue generated on the other hand has not increased significantly resulting in deficits over the years. ZAWA has spent a mere 7% - 19% of its expenditure on operations such as biodiversity conservation, research and protection (see figure 1.4), presenting a significant threat to the continued existence of the parks as a viable conservation entity.

Figure: 1.4. Government and Donor Funding



Source: Elaborated with data from the ZAWA Annual Reports (2010).

A lack of sufficient financing has made it impossible for ZAWA to improve its personnel welfare to adequately manage the entity and thus meet its mandate. Elevation of infrastructure in the parks has been extremely slow and replacement of park rangers has been weak. The latter, compromises on both the security of wildlife and tourists. These deficiencies have had a major impact on conservation and tourism industry in general.

A natural response to the lack of government funding is to find other forms of revenue generation, and entrance fees to national parks are one such form. An understanding of the revenue generation capacity of Zambia's national parks through park entry fees is important as the agency seek to generate revenue that at least covers the cost of supplying the tourism product. Financial self-sufficiency remains a key strategic objective for Zambia Wildlife Authority (ZAWA, 2010). With sufficient revenue, ZAWA will expand its product offering and investment in park infrastructure to guarantee better tourism experiences for current and future visitors.

1.5 Study Objectives

The overall goal of this study is to investigate whether or not the current fees charged are optimal for national parks in Zambia, and if not, to estimate the optimal levels.

Specifically, the study intends to:

- Collect the required data for the analysis through a primary survey in the four most popular parks of Zambia.
- Estimate the demand function of individual tourists that will show the elasticities for price and cross price.
- Determine the optimal entrance fee for each park.

1.6 Study Question

This study seeks to answer the following research question:

- What is the optimal entrance fee for the four most popular national parks in Zambia?

1.7 Significance of Study

The main goal of the study is to investigate the optimal entrance fee for revenue maximisation. In an event where the estimated optimal fees turns out to be less or equal to the current fees, this kind of analysis is critical as it will shed light on whether the current entrance fees are at revenue-maximizing levels. Similarly, in an event where the estimated optimal fee is higher than the current fee, an increase in fees will serve two main purposes, (i) to capture a share of the benefits of revenue expansion and (ii)

to raise awareness on research on entrance fees. A higher estimate of the optimal fee would suggest that there is a need to reform the current pricing strategy. Zambia Wildlife Authority will attain financial stability through maximizing self-generated revenue from tourism and park recreation activities through restructuring revenue collection. The results of this study can be used by the agency – and other agencies in the region to set fees that yield sufficient revenue for the operation of parks. Optimal pricing would generate sufficient revenue to meet its operation costs, to support community development programs, mainstream their participation in economic growth and development.

In the literature review on recreational demand in Zambia, it emerged that no study of this nature has been done. The study will therefore provide the much needed literature for further studies in the area. It will provide the most comprehensive analysis of factors determining individual demand for recreational services – especially that sufficient secondary data is missing for meaningful analysis. In addition, this study will contribute to the literature on park pricing in Zambia through adoption of the Contingent Behaviour Approach (CBA) in the estimation of the optimal conservation fee. To my knowledge, this is the first study estimating the optimal entrance fees for parks in Zambia.

1.8 Limitations of Study

Marshall and Rossman (1998) suggest that, 'there is no such thing as a perfectly designed study.' This study sought to investigate optimal conservation fee for the four national parks. One limitation to calculating revenue-maximizing fee would be the sample size. A bigger sample size would give better results. The other limit would be that the study did not presume to be generalizable to other parks. In other words, interpretations made in this study may not apply to the remaining eleven national parks that were not surveyed. However, the findings may be used in similar settings facing similar issues. Another limitation would be to do with data collected. The narratives and information given was based on the perspective of participants who had actually been to all the four parks. With regards to those respondents that had not been to all the four parks, data given would be biased giving estimates that may not reflect the true picture.

1.9 Organization of Study

The study is organized into six chapters. Chapter one is the introduction; Chapter two gives a background of the creation of protected areas in Zambia. It looks at the evolution of Wildlife management to date; Chapter three is the literature review, it focuses on the theories and approaches of the study in relation to pricing of protected areas in developing countries. Chapter four will discuss the methodology to be employed in the study, including the sampling strategies to be used for the analysis; chapter five

presents the empirical results and policy implications; and chapter six concludes and offer recommendations.

CHAPTER 2: BACKGROUND OF NATIONAL PARKS IN ZAMBIA

This chapter describes ZAWA's history, its characteristics, policies and structure. It gives a summary of the development of wildlife management policies in Zambia and the devolution process towards a co-management approach that has taken place over the years. It also discusses the corporative partners in the wildlife management system and concludes with the description of the study area.

2.1 Evolution of Wildlife Management

The philosophy in establishing wildlife conservation was introduced to Africa by colonialism in the 19th century soon after Africa was divided into territories. The Zambian national park system was based on the recommendations coming from a Report on the Faunal Survey of Northern Rhodesia, by Col C.R. S. Pitman, published in 1934.² The criteria used 78 years ago to justify the creation of protected areas were (i) the existence of species demanding special protection; (ii) areas not suitable for agriculture purposes, either because the soils were poor for cultivation, or because of the existence of tsetse flies which are a danger to domestic animals; and (iii) the non-existence, or low density of human settlement.

Prior to colonisation, the responsibility for wildlife use and protection was conferred on the communities. The village chief who is the 'Head of community' controlled the allocation of land and access to use of forest and wildlife resources until the 1940s when

² Pitman, Col. C.R. S., Report on the Faunal Survey of Northern Rhodesia, 1934.

the colonial Government passed legislation that established Control Hunting Areas (CHAs). The objective behind the establishment of CHA was to secure subsistence hunting for licensed residents and to keep the tsetse-flies from spreading to domestic animals (Ooi, 1982). By 1954, hunting activities were restricted to holders of licenses which only allowed white hunters to access the resource, leaving local communities with no choice but to poach. This development entailed that ownership and access to wildlife resource was transferred from chiefs to government. However, the land continued been administered by chiefs while wildlife and nature resources administration was moved to the government.

After independence, Zambia showed her commitment to wildlife conservation and the current protected area network covers 30% of the total land area.³ Out of this land, 8% are National Parks (NPs) and 22% are Game Management Areas (GMAs). The current National Parks and Game Management Areas were first established under National Park and Wildlife Act No. 57 of 1968, which allowed the head of state to proclaim any area a national park. In 1971, the Game Management Area Declaration Order was enforced, later in 1972, the National Parks Declaration Order and Statutory Instrument No. 44 of 1972 was also enacted. These statutes currently hold and form the network of National Parks and Game Management Areas. (Chundama et al., 2004).

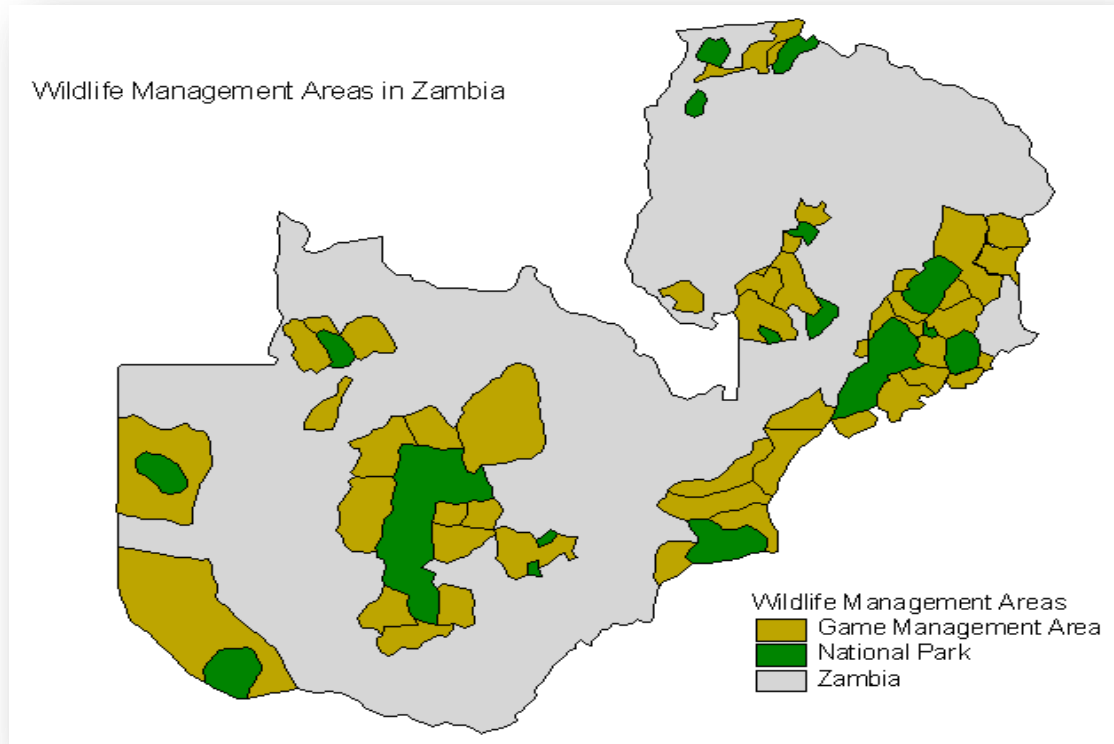
National parks were designated primarily for the conservation of ecosystems, biodiversity and wildlife, comprising a large diversity of animal species in their natural

³ This is the second largest proportion of land under protected status in Southern Africa with approximately 225,000(sq.km) square kilometers designated as protected areas.

habitat. The criteria used for selection as earlier mentioned were that these areas had less human habitants making it suitable as only few people were displaced. The establishment of the parks was based on the South Africa's Kruger National Park model. The model does not allow human settlements but only non-consumptive activities such as photographic safaris.

On the other hand, Game Management Areas (GMAs) were created in 1971 under the National Parks and Wildlife Act of 1968 as a planning framework for integrated community and biodiversity development. The main reason for its creation was to serve as buffer zones between national parks and community farming areas. These areas provide opportunities to hunt as well as settlement. It also acts as a shield preventing the spread of diseases caused by tsetse flies to community areas. GMAs are intended to promote sustainable harvest of wildlife to promote ecosystem balancing (Simasiku et al, 2008). GMAs also offer wildlife viewing; they allow human settlements and licensed hunting. Figure 2.1. shows the current network of protected areas in the country, which are classified as National Parks, and Game Management Areas.

Figure 2.1. Zambia National Parks and Game Management Areas.



Source: <http://proceedings.esri.com>

Legal hunting is the principal non-farm economic activity in GMAs. GMAs that have substantial numbers of wildlife population are subdivided into hunting blocks. These blocks are given special rights to run trophy-hunting operations. The license to hunt is leased out to outfitters by the Government of the Republic of Zambia (GRZ's) Tender Board Authority for a period of three years (Lewis and Alpert, 1997). The revenue generated in these blocks is then shared between ZAWA and the local communities.

2.2 Zambia Wildlife Authority (ZAWA)

In trying to effectively allocate the nations scarce resource, the government of the Republic of Zambia decentralized some institutions and gave them autonomy to run affairs with a common view of economic development. The establishment of ZAWA was part of on-going reforms initiated by the IMF/World Bank Structural Adjustment Programme (SAP). The first opposition party in power then, implemented the change in 1991 that aimed to reduce government subsidies to various sectors.⁴ ZAWA was intended to replace the dysfunctional department of National Parks and Wildlife Service (NPWS). For 30 years the entity had failed to meet its mandate to protect wildlife and contribute to national development. The poor management of the entity was aggravated by a reduction in government funding from 13.8% of government budget in 1954 to 0.45% in 2000 (ICC, 2000). Poaching activities increased leading to almost extinction of the big fives. The population of the black rhino in the Luangwa Valley decreased from about 8,000 head in the early 1970s to less than 100 by the mid-1980s, and vanished afterwards. At the same time, the population of elephants reduced drastically from 90,000 to 15,000 (Child and Dalal Clayton, 2004).

Zambia Wildlife Authority (ZAWA) was established by Act of parliament No. 12 of 1998. However, operations only commenced in 2000. ZAWA's mission is to contribute to the preservation of ecosystem and biodiversity for present and future generations through the conservation of Zambians wildlife resources (ZAWA, 2008). It is mandated to

⁴ The process started in 1992 with the commissioning of a report on possible mechanisms for change (Child and Lee, 1993: Reorganization and Restructuring the Department of National Parks and Wildlife Service, WWF).

manage the welfare of National Parks (PAs) and Game Management areas (GMA) with the help of communities surrounding them.

The creation of ZAWA as an autonomous entity in the early years of 2000 was not easy in the initial stages. The transition stage from NPWS to ZAWA faced major challenges. The process left an institutional void at the field level that resulted in the ruin of wildlife populations in all national parks and GMAs. Staff members were retrenched reducing numbers from 4,400 to 1,400 under ZAWA management (UNDP, 2006). Poor infrastructure and lack of adequate funding left the agency in shambles relying mostly on hunting activities to generate revenue in order to manage its mandate. The establishment of ZAWA took off without the recapitalization that would have enabled it to carry out effective and efficient resource protection, monitoring programs and infrastructure development.

2.2.1 ZAWA Management Structure

An independent Board of Directors appointed by the Ministry of Tourism, Environment and Natural Resources (MTENR), is responsible for ZAWA's organization. Its role includes the establishment, control and management of GMAs and provides for the sustainable use of revenue from conservation (ZAWA Act, 1998). The board is permitted to appoint ZAWA's management personnel who are answerable to it. In line with the provisions of the Act, the Authority forms four committees 'Technical and Operations; Finance; Audit; and Staff' whose membership comprises 50% representation from the Authority members and 50% from outside the board consisting of experts from diverse and relevant backgrounds to give independent advice to the Authority. Both the

Chairperson of the Board and the Director-General are ex-officio members of all Board Committees. In addition to the central administration, the board also appoints and creates Community Resource Boards (CRBs). These boards assist ZAWA to protect wildlife and assist in community development. The CRBs are the highest management authority at a community level with regards to wildlife management. Each CRB includes a maximum of 12 members who are democratically elected by the local communities in which they live. GMAs that are huge with large numbers of wild animals are subdivided into many blocks each with a CRB representative. The income generated from trophy hunting is then shared between CRBs and ZAWA. From the total income generated through trophy hunting, 45% goes to CRBs; 5% to Chiefs as CRB patrons; ZAWA gets 40% while 10% goes to the central government. Revenue generated through leasehold concession fees are divided as follows: 15% goes to CRBs, 5% to the chief and 80% to ZAWA (Manning, 2011).

Zambia Wildlife Authority and its Board with the help of its proxy Community Resource Boards are mandated through the Act to carry out the following specific objectives:

“In partnership with local communities to share the responsibilities of management in Game Management Areas.

- To enhance the economic and social well-being of local communities in game management areas.
- To encourage general development in National Parks and GMAs, including the development of facilities in accordance with management plans.

- To prepare and implement management plans for National Parks and GMAs, in consultation with local communities.
- In partnership with communities, to grant hunting concessions to hunting outfitters and photographic tour operators in GMAs.
- To assist and advice the community Resource Boards (CRBs)
- To pay out money to a CRB, from license and concessions fees obtained, and according to regulations issued by the Minister.
- To delegate any of its functions to the CRBs” (ZAWA, 2010).

The policy recognises the importance of community participation in wildlife and natural resources management.

2.2.2 ZAWA Conservation Partners

Over the years ZAWA has partnered with other stakeholders in the management of National Parks. More than 70% of the national parks area was hived off into Public-Private Partnerships (PPP). The active ones include Kasanka Trust Limited in Kasanka national park and Frankfurt Zoological Society in North Luangwa national park. Others are Conservation Lower Zambezi, Africa Parks and Cologne Zoo. These organisations operate under formal agreements with ZAWA, they offer different services including but not limited to research, community outreach, animal reintroduction, law enforcement, infrastructure development, tourism supervision, financial and technical support.

With a high levels of poaching that nearly swept wildlife to zero in the 1980s and 1990s, ZAWA formed innovative partnerships with NGOs for the management of protected areas. About 50% of ZAWA's grants come from donors through various projects (ZAWA, 2010). Community Based Natural Resource Management and Sustainable Agriculture (CONASA) under a cooperative agreement with USAID in Zambia were commissioned to improve the livelihood security and sustainable resource management in the Bilili /Nkala, Sichifula and Mulobezi GMAs in Southern Province (Manning, 2011). The project was implemented by CARE International, the Africa Wildlife Foundation and Administrative Management Design for Game Management Areas. Other institutions that offer financial and technical support includes Royal Norwegian embassy, Royal Danish embassy, World Bank and UNDP. A number of local and international organisations with operations in Zambia, include, South Luangwa Conservation Society (SLCS), Wildlife Environmental Conservation Society of Zambia (WECSZ), Professional Hunters Association of Zambia (PHAZ), the Safari Hunters Association of Zambia (SHOAZ), Wildlife Producers Association of Zambia (WPAZ), World Conservation Union (IUCN), World Wildlife Fund (WWF), and South Luangwa Management Unit (SLAMU) to name a few.

2.3 Study Area Description

Recent studies indicate that the majority of tourist's particularly international holiday makers come to Zambia mainly for the purpose of viewing wildlife in national parks and the Victoria Falls in Livingstone town (World Bank, 2007). The most popular tourist

destinations in Zambia include the Victoria Falls inside the Mosi-oa-tunya National Park, the Lower Zambezi National Park, the South Luangwa National Park and Kafue National Park. In 2004 and 2005, these parks accounted for 96% and 95% respectively of national park visits by foreign tourists (World Bank, 2007). Each of these national parks has unique features that are at the very peak of tourism attraction. Below are the descriptions of the four sites for the study.

South Luangwa National Park

Many commentators have labelled South Luangwa National Park as one of the greatest wildlife sanctuaries in the world. The concentration of game around the Luangwa River and its ox bow lagoons is among the most intense in Africa. The Luangwa River is the most intact river system in Africa and constitutes the lifeblood of the park, which measures about 9, 050 km². The famous walking safari originated in this park and is still one of the finest ways to experience this untouched wilderness first hand. The most popular of all parks, South Luangwa, has classic safari as well as walking safari. Animals are plentiful and sightings are magnificent.

There are about 60 different animal species including endemic large mammals such as Thornicroft's giraffe and Cookson's wildebeest and over 400 different bird species in the park (World Bank, 2006). Whilst in the South Luangwa National Park, tourists are expected to view bursting numbers of hippos in the dambos and huge herds of elephants in the valley plains. In addition to these animals, there are about 14 species of antelopes in the park of which the eland is the largest. The park further boasts of plentiful predators including the lions and leopards and tourists in most cases

experience live kills mainly by hungry lions. Bird watching in the South Luangwa National Park particularly during the end of the dry season can be quite spectacular, as tourists have the chance to view over 400 bird species with varying attributes in one place.

The park is accessible by both road and air transport. The Mfuwe airport recently attained international status with the onset of direct flights from Lilongwe in Malawi and chartered flights from all over the world. Mfuwe part of the park is also a major destination for the over landing truck and 4x4 tourists. The majority of foreign tourists come to Mfuwe through Lusaka where they connect on domestic flights, which are on a daily basis especially during the dry season which is the peak of the tourism in Zambia.

Mosi-oa- tunya National Park/ The Victoria Falls

Mosi-oa-tunya National Park, though the smallest of the four parks chosen for the study, has a variety of wildlife. The Park was named after the Kololo tribe description of the waterfalls on the Zambezi River (ZAWA, 2008). Mosi-oa-tunya means “the smoke that thunders”. The park is situated along the upper Zambezi stretching from and including the falls for about 12 kilometres up the river. The Mosi-oa-tunya Park measures only about 66 km² but is home to numerous antelope species, Zebra, Giraffe and white Rhinos. Game viewing in the Park can either be done through boat cruises on the Zambezi River, safari drives or through Elephant back safari. Whilst in Livingstone town, tourists can go sightseeing to the Victoria Falls Bridge, Mukuni Cultural Village and the Livingstone Island. David Livingstone had his first glimpse of the falls from this same Island as far back as 1855. Livingstone town is home to the Mosi-oa-tunya

National Park and one of the most spectacular falls in the world, the Victoria Falls. The wide basalt cliff over which the falls thunders measures nearly 2 kilometres in width and over 100 metres deep. Heavy sprays of water particularly during the flood season can be seen miles away as 546 million cubic meters of water per minute plummet over the edge of the cliff. When tourists are in the falls area they have an opportunity to walk through the water-spray forest and across the Knife Edge Bridge that offers a better panoramic view of the falls. Further, the Victoria Falls area has of late become the adventure centre of Southern Africa. The falls and the mighty Zambezi river also provide spectacular adventurous activities to various tourists including bungi Jumping, white water rafting, canoeing, river boarding, abseiling, tandem kayaking, jet-boating, river safaris, surfing, micro lighting and helicopter flights (Peace parks foundation, 2008).

Lower Zambezi National Park

The Lower Zambezi national Park is one of the most spectacular parks in Africa where visitors have a chance to get close to various types of wildlife that wonder around in a place that has been spared from the problems of modernization. The beauty of the park lies in its state of absolute wilderness. The park lies opposite the famous Mana Pools Reserve in Zimbabwe, making the whole area on both sides of the Zambezi River stand as a massive wildlife sanctuary. Lower Zambezi is popular for its canoe and boat safaris on the Zambezi River. Angling for tiger fish is becoming a central attraction, and tourists can enjoy large populations of hippo and elephant with the escarpment as a dramatic backdrop.

The Lower Zambezi National Park is accessible mainly by air through the Kenneth Kaunda international airport and by river. Since the park is undeveloped, accessibility by road is yet to be fully developed. However, some tourists particularly the 4X4 ones have been going to the park by road. Usually the tourism lodge Operators in the area prefer to make transport arrangements for the tourists. Located on the southern part of Lusaka province valley area, the Lower Zambezi National Park covers an area of about 4092 square kilometres. The area has a high concentration of wildlife and birdlife along the valley floor. The park is mainly home to elephants, buffaloes, zebras, hippos, waterbucks, kudu and other common antelopes found in Zambia. The park also hosts a good number of predator cats 'lions and leopards'. The birdlife along the riverbanks is exceptional. Fish eagles can be seen and heard many miles away. Because of the poor state of the road to the Lower Zambezi National Park, the majority of the tourists that visit the park travel using light aircrafts.

Kafue National Park

Kafue is emerging as 'the last wilderness in southern Africa' (World Bank, 2006). Larger than the Kruger National Park in South Africa, it offers an unmatched variety of wildlife. Its main features are Lake Itzhi-tezhi and the Busanga and Nanzhila Plains with large concentrations of antelopes and a predator including tree-climbing lion. The Park is the oldest and largest park in Zambia covering about 22, 400 kilometres squared. This land mass is about 35% of the country's total national park estate. The park, which is approximately the size of Wales, is the second largest national park in the world (World Bank, 2006). Despite its proximity to Lusaka and Copperbelt provinces, the park's abundant and varied natural attributes and character have remained fairly intact. The

park offers excellent game viewing, bird watching and fishing opportunities. The Kafue National park is endowed with a full menu of antelope, elephants, buffaloes, hippos, red lechwes, and prime predators including lions, solitary leopards and cheetahs. There are over 400 species of birds throughout the park. Bird watching particularly along the river and dambos is just superb. Fishing opportunities especially on the Kafue and Lunga Rivers just spices up the experience in the park. The park that only has one privately owned airstrip is mainly accessible by road especially from Lusaka.

This chapter has presented condensed background information to the study by providing the evolution of Zambia's National Parks management and the description of the study area. We now look at the theories and studies done on park pricing in the next chapter.

CHAPTER 3: LITERATURE REVIEW

There is a growing body of literature concerning pricing of parks and other nature sites, both in the developed and developing countries. This chapter summarises three key points. First, it will look at the rationale and objectives behind park pricing (main focus of the study); secondly, it will then look at the theories of a monopolist and price discrimination. It investigates how a monopolist like Zambia Wildlife Authority will maximise its revenue using third degree price discrimination; thirdly the approaches related to the valuation of non-market goods and service in general and national parks in particular will follow. This chapter is also devoted to look at the theoretical background upon which the Contingent Behaviour Approach (CBA) is anchored - the approach that is used in this study and lastly the empirical studies done on pricing of protected areas.

3.1 Theoretical Literature Review

3.1.1 Rationale of Park Pricing

The context of charging conservation fees is often surrounded by philosophical and legislative debates. Those entrusted to manage the parks perceive elevation of fees with different reasons to impose a rise. Below are some of the reasons why park management charges a fee to have access to its protected areas.

Entrance fees are primarily designed to increase funding available for the area's conservation activities. There is a general consensus that people who use/benefit from nature must pay for the service (Mendes, 2003). This principle suggests that the cost of marketed goods and services should reflect their full social cost.

The other reason for charging entrance fees is that it can serve as a mechanism for facilitating or limiting visitor access. Too many visitors can be a burden to the carrying capacity of a park and cripple the park's ability to regenerate. Congestion can also be a burden to the social carrying capacity of the park and create disturbance to other visitors. Demand for congested parks will eventually drop as non-rivalry in consumption no longer exists (Mendes, 2003; Sibley, 2001; Chase et al., 1998; Abala 1987). Hence, some demand regulations are necessary when there is a limit to capacity use, and a fee charged must be to the point where visitors are reduced to levels that do not impose congestion costs. The link between maintaining natural areas and income from user fees is a strong economic incentive for conservation.

Another motivation behind user fee is that most governments have become more rigid in terms of resources allocation to state agencies and parastatals. The decline in government revenue against a myriad of public expenditure needs has forced prioritization of allocation of resources to sectors that yield high social benefits, such as the education sector, the health sector, agriculture and infrastructure. As a result, allocation to parks development receives less consideration. Charging entry prices is a fair way to raise needed revenue to meet the operational costs of parks (Alpizar, 2006; Herath, 2004; Walpole et al., 2001; Moran, 1994).

The goal of raising enough revenue to meet operation costs is an obvious one for protected area managers whose budgets are limited. The collection of revenue from nature-based tourism shows that parks have financial value, which is important in political discussions of land allocation and use. If revenues from entrance fees can be increased, this may enable park managers to gain increasing independence from government interference; greater financial independence may lead to greater policy self-sufficiency.

Park agencies are also interested in conserving and developing less visited parks. The resources needed for their operation can be obtained using the policy of price discrimination. At a park with a non-elastic demand, a higher price may be charged, and the excess funds may be diverted to less visited parks - where their development may encourage greater visits in the future.

The other reason is that Protected Areas must be maintained – in order for services to be offered to the visitors, such as road network, toilets and fresh water supply and information booths, there is a need for financing. Visitors arriving at the park require at least basic services, and often more than that, these services come with a cost.

Fees can be designed to reduce marginalisation of certain groups perceived to receive unfair benefits. The fee policy may deliberately subsidize target groups such as local communities surrounding the resource, nationals, the aged, school going children, so they may benefit from its use.

Fee policy for publicly owned parks can be designed to stimulate private business and regional economic development (Laarman, 1996). The assumption is that park users appreciate the resource more if they pay for it. Destructive behaviours such as vandalism, littering are reduced if users pay for the service.

Even though conservation fees are important, the fees should be treated only as one form of revenue generation. It is important that policy makers find other alternatives to effect proper management of the agencies. Even for heavily visited sites, entrance fee revenue generated rarely covers total costs, especially capital costs. Heavy dependence on fee revenue reduces visitor diversity and the scope of attractions that can be offered. It is therefore important to take into consideration other factors that would be affected by the increase in entrance fees. One of the negative effects is the reduction in park visitation demand - affecting revenue levels for park operators who might reduce its work-force in an effort to cut on the operating costs. Needless to say government revenues would also dwindle with the increase in fees. Implementation of a new fee should therefore be accompanied by monitoring and evaluation to determine the actual impacts.

3.1.2 Monopoly and Price Discrimination

Policy on differential pricing for outdoor recreation such as national parks is currently receiving attention. Differential pricing has always been used to increase both revenue and efficiency by commodities such as airline fares, electrical rates, telephone bill

pricing among others. Before we assess the impact of user fees and differential pricing, let us have a closer look at the principle of monopoly and price discrimination.

Economists use imperfect market models as a tool for price discrimination. If there is only one firm on the market; a monopoly, the seller can affect the market price by reducing its output of the good it supplies. This is because there exists no substitutes, and the firm faces a downwards sloping demand-curve. This firm has market power and is the price setter on the market. In a natural monopoly like national parks, it is possible to price discriminate.

Price discrimination means charging different prices to different consumers - where the price difference cannot be fully explained by the differences in cost. A monopoly firm always wants to increase its profits and one strategy is often for this purpose is price discrimination. However there exist some criteria for a firm to be able to price discriminate. First, market power is a must, without market power a firm is unable to charge any consumer a higher price than the competitor's price. Second, the price discriminating firm must prevent or limit resale. If a consumer who pays a lower price is able to resell the good to the consumers that pay a higher price, the firm would lose all their sales from high-charged consumers, since they instead would buy their good from the low-charged consumers (Carlton and Perloff, 2005).

There exist many ways in which firms can charge non-uniform pricing; the first classification narrows them down to three different types of price discrimination. First, '1st degree price discrimination' in which each and every consumer pays a different

price. The price paid by a consumer reflects their highest willingness to pay for a good. Second, the '2nd degree price discrimination' where the price paid for each and every good depends on the number of goods purchased and Third, '3rd degree price discrimination' where each group of consumer is charged different prices per unit purchased (Carlton and Perloff, 2005).

This study focuses on multimarket (third degree price) discrimination. The firm that adopts a third degree price discrimination take advantage of a fact that the consumers have distinct downward-sloping demand curves for the product 'have different price elasticities'. Multi-tiered pricing occurs when fees vary by category of visitor (Laarman, 1996). It tries to discriminate among individuals on the basis of broad but mythical averages, such as, foreigners are rich, students and old people are poor. Therefore, an agency that attempts to maximise revenue will charge different fees to different visitors in relation to their variable willingness to pay. Such a multi-tiered pricing policy will yield more revenue than either a high or low fee alone.

Let us suppose that a monopolist produces a single product at a total cost of $C(q)$, and that he is able to divide the aggregate demand into m "markets/groups" on the basis of some exogenous information (i.e., citizen and foreign). These m groups have m distinct downward-sloping demand curves for the product and the monopolist is aware of the difference. The assumption is that arbitrage cannot occur between groups and that a monopolist cannot discriminate within a group. Hence a monopolist charges a linear tariff for each group.

Let equation (1), (2) and (3) denote the prices in different markets; quantities demanded and aggregate demand respectively.

$$P_i = (p_1, \dots, p_2, \dots, p_3) \quad (1)$$

$$q_i = D_i(p_i) \quad (2)$$

$$q = \sum_{i=1}^m D_i(p_i) \quad (3)$$

The monopolist will choose prices to maximize his profit as follows:

$$\sum_{i=1}^m p_i D(p_i) - c(\sum D_i(p_i)) \quad (4)$$

We know that with multimarket price discrimination, demands are independent and costs are dependent. This analysis tells us that relative price margins are given by the inverse-elasticity rule:

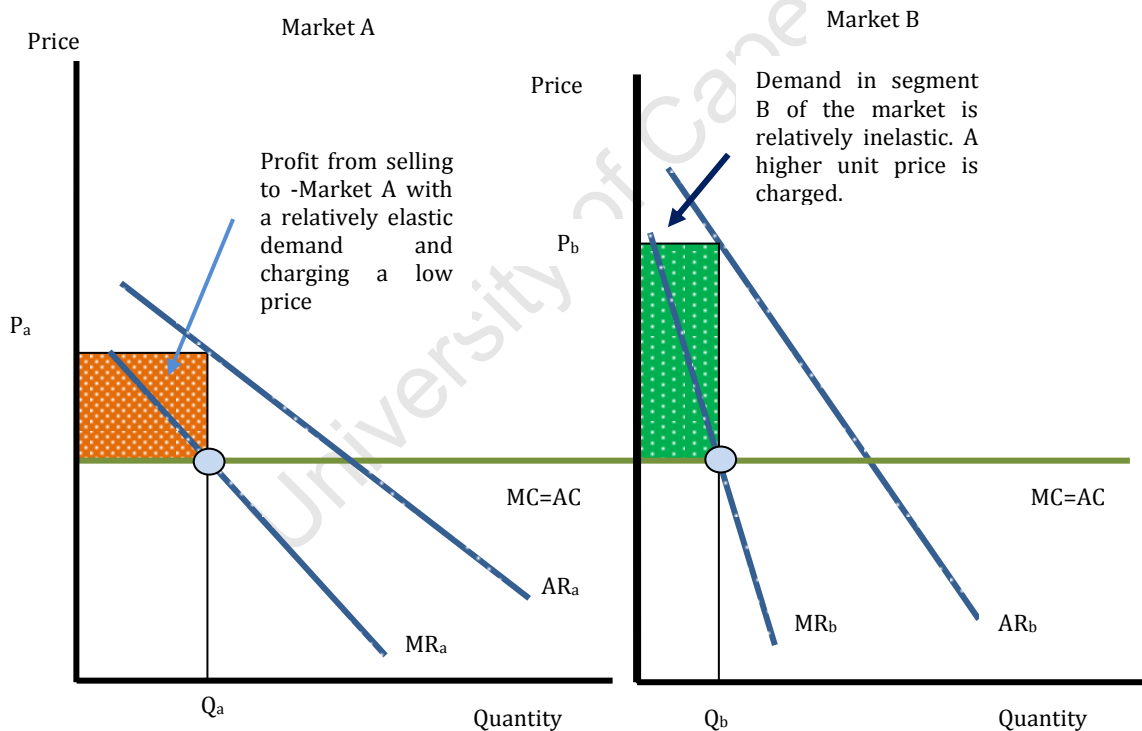
$$\frac{p_i - C'(q)}{p_i} = \frac{1}{\varepsilon_i'} \quad (5)$$

Where $\varepsilon_i = -D'_i(p_i)p_i/D_i(p_i)$ is the elasticity of demand in market i . Optimal pricing implies that the monopolist should charge more in markets with the lower elasticity of

demand and less in markets with higher elasticity of demand. This rule explains why a monopoly like a national park can price discriminate between different groups.

Figure 3.1 below illustrates how a national park agency can separate a market by category of visitors, such as foreign and local. Market 'A' depicts (local tourists) with elastic demand, while Market 'B' depicts (foreign) with inelastic demand.

Figure 3.1. Price Discrimination in Market A and B



Source: graph adopted from <http://www.tutor2u.net/economics/revision-notes/a2-micro-price-discrimination.html>

The agency may charge a higher price to foreign tourists if demand is estimated to be more inelastic than it is to local visitors. The demand and marginal revenue curves for Local and Foreign are labelled 'A' and 'B' respectively. Assuming a constant marginal

cost for supplying to each group of consumers, the firm aims to charge a profit maximising price to each group. In the local market the firm will produce where $MR_a = MC$ and charge price P_a , and in the foreign market the firm will produce where $MR_b = MC$ and charge price P_b . Consumers with an inelastic demand for the product will pay a higher price (P_b) than those with an elastic demand who will be charged P_a .

Charging different prices to different category of people will increase total revenue and will consequently allow visitation numbers to be tailored to address site-specific characteristics and concerns such as, rendering many locals the opportunity to view nature at a lower cost.

To conduct direct price discrimination the firm must have readily identifiable individuals or groups of customers who differ in their willingness to pay. The firm charges a higher price to those groups with a higher willingness to pay (lower elasticity of demand) and a lower price to those groups with a lower willingness to pay (higher elasticity of demand). Different approaches are used to determine the demand elasticities of consumers. In this study, primary data will be used to derive the demand function of each individual and its elasticities. The next section discusses the different approaches used to value ecotourism/ non-market goods.

3.1.3 Approaches to Non-Market Valuation.

In valuing ecotourism and wilderness areas, the literature has grown from using Revealed Preference (RP) methods (Bhatt and Gossen, 2004) to applying Stated

Preference (SP) methods. RP methods focus on the valuation of non-market goods and services which are based on the observed behavior of individuals (Boardman et al. 2006). Examples include hedonic pricing, travel cost and market pricing methods. SP methods on the other hand, use survey techniques to stimulate information regarding cost and benefits from individuals. The technique is often used to value public goods without market values such as natural resource. Examples include contingent valuation and stated choice modeling techniques.

Pertaining to this study, two common approaches used in valuation of natural resource are Travel Cost Method (TCM) and Contingent Valuation Method (CVM). TCM reveal people's willingness to travel to enjoy the amenity value the public resources provide. US National Park Service used the first Travel Cost technique back in 1947 - the purpose was to show that the benefits derived from a park exceed the cost to the visitors (Farrow 2000 cited in Hotelling 1947). Later in 1959 Clawson explicated this concept in more detail, which brought TCM in economic literature.

The travel cost approach focus on the assumption that there are different factors that influence travel costs. These factors include both direct and indirect costs of visitor's time, which influence the length and frequency of visitation to a certain destination. Even though the approach seems to be a favorite in the developed world, it has restrictions when it comes to multiple destination trips (Pearse 1968), as is the case in this study. Secondly, assumptions such as the homogeneity of marginal costs and preferences of visitors from each origin are problematic (Wennergren 1964). To avoid such limits, studies done in developing countries often exclude non-residents in

estimating use value of protected areas (Durojaiye and Ipki 1988; Tobias and Mendelsohn 1991), and if foreign tourists are considered in the study, restraining simplified assumptions are imposed (Mungatanaa and Navrud 1994). Although studies that have used TC approach have provided useful insights in the valuation of natural resource, they have mainly focused on estimating consumer surplus than on evaluating user fees - the main objective of this study.

On the other hand, Contingent Valuation Method (CVM) estimates the value that an individual places on a good or service. The approach directly asks individuals to report their willingness to pay (WTP) in order to obtain specific goods or services, or willingness to accept (WTA) to give up a good or service. Since the approach creates an imaginary market place in which no actual transactions are made, CVM generate values for goods that cannot be priced directly through a market (Cummings, Brookshire, and Schultze, 1986). The approach has proven principally useful when applied alone or jointly with other valuation technique for non-market goods. Contingent Valuation approach is known to be more flexibility than TCM in that a survey can be designed to elicit many different types of values, not only the use value of a specific area such as a national park but also the value of other amenities such as clean water, air - to name a few. Critics of the contingent valuation approach allege that the quality of stated preference data is inferior to observing revealed preferences. They consider contingent valuation a "deeply flawed method" for valuing non-use goods and point at the possible biases affecting contingent valuation data. A study done by Shultz, et al (1997) confirmed flaws that include sampling techniques limitations and location biases that are caused by variations in cultural background and the frequent lack of specific

information given in hypothetical questions. Chase et al. (1998) assert that by using standard survey techniques, it has practically been impossible to collect data that is required to estimate an unrestricted system of demand equations including cross-price elasticities.

3.2 Empirical Literature Review

There is growing body of literature focusing on ecotourism valuation and protected areas in developing countries. The growing interest in park pricing has led to many empirical studies to investigate the optimal conservation fees that users are willing to pay. This has been prompted by the fact that governments in these respective economies have reduced funding to Protected Areas and focused mainly on other pressing economic issues such as health, education, agriculture and provision of infrastructure. In conducting such studies, different methodologies have been employed in different cases, and results obtained have varied from country to country, from time to time, and also by methodology used. However, in the results obtained, there have been common trends of upward increments in user fees.

Moran (1994) used a contingent valuation survey of expressed preference to estimate the consumer surplus attached to a recent non-consumptive use of protected areas by foreign visitors at US Dollar 450 million per year in Kenya. The amount was more than double the best available estimate of opportunity cost of land under protected areas and appeared to validate the use of it for protection and management of wildlife. The

estimate was additional to financial returns from tourism and did not make allowance for other direct and indirect benefits and potential returns from consumptive uses. The consumer surplus that was measured had some margin of willingness to pay that could be captured through the existing fee structure. Besides, the study noted that park entrance fees represented the most accessible market mechanism for revenue generation and additional park investment before potential option to emerging global market institutions.

Double bounded dichotomous Contingent Valuation Method was used in the study. A total of 311 usable responses were obtained and the dependent variable provided a binary variable modeled in respect to the bid amount plus other explanatory variables. The maximum likelihood estimator was obtained through estimation of a logit model. In terms of pricing policy recommendation, the study suggested that the agency could experiment with a margin of between the existing fee of \$15 and \$85 and proposed that future research should attempt to determine elasticity of demand.

A study by (Isangkura, 1998) used the contingent ranking method to measure the value of environmental benefits of three recreational areas in northern Thailand. The findings were that it was easier for the respondents to indicate their preferences in the contingent-ranking format than in the open-ended WTP format. The bound estimates from the indirect utility function were used to calculate the welfare benefits derived from visiting the protected areas. These benefits were then used to come up with the appropriate entrance fee. The study found that an increase in the entrance fees would

indeed raise park revenues. The research suggested that a rise in revenue could be used for recreational management and would help ensure the continuity of recreational services provided by national parks in Thailand.

Another study by Arin and Sills (2001) investigated the development of tourism in the national parks of the Republic of Georgia. CVM was used to determine potential revenue capture by the park, with a split sample evaluating the impact of 'annual pass' vs. 'daily entrance fee' payment vehicle on WTP and on expected numbers of and length of visits. The study found that about 70 % of the respondents would revisit at least once in the coming year. The probit model results showed that educated young adults of Tbilisi with large budgets for leisure activities were more likely to visit the parks. The mean predicted expenditures per trip (excluding park fee) were 150 lari (2 lari = US \$1) with significant explanatory factors including city of residents and travel preferences. The study revealed that the model of WTP for an annual pass had a greater number of significant coefficients on variables theoretically and intuitively expected to influence WTP, including size of household, car ownership, leisure budget, and number of past visits to natural areas. The study found that older respondents and women's WTP were less as were households who listed picnicking as one of their outdoor activities.

Walpole et al. (2001) investigated the pricing policy for tourism in protected areas in Indonesia. Using a case study of Komodo National Park, the study sought to examine the extent to which ecotourism offset the costs of protected areas. In addition, the study

examined the likely negative impact of a large fee increase on visitor numbers and the resultant impact on the local economy of the population living around the park. The authors used a dichotomous choice contingent valuation approach⁵ to examine the effect of a hypothetical rise in entrance fees on visitation and revenue generation from visitors to Komodo National Park.

A hypothetical demand curve was created using willingness to pay results. A log-linear demand curve was fitted for the observed data. Results from the study indicated a high WTP, some of which could be captured with higher entrance fees. Based on available cost data, the study found that although only 6.9 percent of park management costs were recovered from tourism receipts, visitors were willing to pay over ten times the entrance fee, which indicated a substantial potential for revenue mobilization. Revenue maximization entrance fee was found to be US\$13.54, which was 15 times the fee of 1996. It was also found that at the average entrance fee of US\$11.70, revenue mobilization increased by 587 percent. This revenue level would cater for up to 40.6 percent of the total cost of park management but will result in a serious decline in visitation levels by over 62.2 percent. A fall in visitation will negatively affect the livelihood of the surrounding community.

The extent to which increases in revenue can be pursued with an upward adjustment in entry fees is limited by visitors' response to an increase in fees. This meant, therefore,

⁵ Respondents were first asked how a specific increase in entrance fee would affect their decision to visit the park. Depending on their answer, they were then asked how higher or lower increases would affect them.

that total cost recovery through internally generated revenue was unlikely for Komodo National Park. This conclusion, although discouraging, was arrived at based on the policy objective the authors set to achieve. They aimed for a pricing strategy that will increase internally generated revenue, without resulting in a large fall in visitation, since a large fall in visitation would negatively impact the economy of the local community surrounding the park.

Tourism related costs were estimated as a proportion of total recurrent expenditure and the findings indicated that the costs were fully offset by the tourist revenue. The study argues that tourism receipts should not necessarily offset the total cost of park management but only the tourism related costs.

Mendes (2003) investigated the extent to which one could affirm that charging the visitors of a protected area is or is not an efficient and equitable way of generating income and of improving nature conservation. Using the travel cost method approach; the study estimated the maximum willingness to pay for a one day adult visit to Peneda Geres National Park in Portugal (a local national park) at 1.33 Euros. According to the study, there are two preconditions to efficient pricing of recreation parks. Firstly, the marginal costs (usually operational costs strictly related to recreation demand, congestion and environmental depletion costs) must be positive and decreasing over the relevant range of the demand schedule. Secondly, the cost of price administration should not be too high.

The study estimated a Marshallian demand curve for the park as a function of entrance fee, visitor's per capita income, time available for recreation, visitor's age, visitor's education level and the degree of perception of the quality and environmental amenities of the park. Entry fee contained two recreation costs; travel costs (plus opportunity cost of time spent travelling), and onsite recreation costs, including opportunity cost of time spent during on site stay. The opportunity cost was captured through assumption of percentage of per capita income lost as a result of foregone time for labour. This ranged between 0 and 50 percent of the hourly wage rate.

Using a semi-log model, the regression results showed that a unit increase in entrance fee reduced the number of days spent on a recreation site by 0.243 (minimum) to 0.496 (maximum), assuming a 33 and 50 percent level of opportunity cost of time, respectively. The demand for visitation is not sensitive to increase in income variation (not statistically significant). The latter results seems to contradict the findings by Chase et al. (1998) who found that, although income did not influence choice of park to visit, it did influence the duration of stay in the three popular parks in Costa Rica. The other variables, namely; time available to spend in recreation, age of the respondent, and education level, had the expected sign and were statistically significant.

On pricing, the study adopted setting of the entrance fee equal to the visitor's reservation price per day of visit. This price, however, did not guarantee that visitors will fully pay for costs of supplying recreation services. What it did guarantee was that visitors will pay a fee equal to their maximum willingness to pay for the right of visiting the park. This could be taken to imply that the author advocates for retention of crucial

second source of financing for the recreation supply, perhaps through government subvention.

Alpizar, (2006) using secondary data, estimated the optimal entrance fee and revenue for Costa Rican system; the study stressed the possibility of third degree price discrimination based on visitor's nationality. The author proposed an optimal pricing model for recreation in protected areas. The study aimed obtaining optimal prices for foreign and national visitors to the Costa Rican System of Protected areas. The empirical application necessitated the estimation of the demand of foreign visitors for recreation day visits as a function of the entrance fees using actual prices and monthly visitation days to the parks.

Using a log-linear demand function, the study estimated the demand of foreign visitors for recreational day park visitation as a function of the entrance fee. It is noted in the study that Costa Rica is one of the few countries where entrance fees had changed several times, which provided enough information to estimate the demand for protected areas. In those cases where direct demand information on price variations is not available, as is the case in this study, primary survey was conducted. To account for distributional fairness, the study assigned different welfare weights to the consumer surplus of different groups of visitors. The findings indicated that the optimal price for foreign visitors ranged from US\$ 10 per day visit for the case of zero marginal costs to US\$15 for the case of marginal cost equal to US\$4. The study had assumed that only if the profits from the foreign tourists group did not cover the fixed costs, will the price to

nationals deviate from the marginal cost pricing. The issue that remained unaddressed in this study was the quantification of external costs and the social benefits attributed to tourism. The study assumed that the external costs and the social benefits exactly offset each other for a positive spill over from tourism activities. This aspect remains a challenge in many empirical applications. The assumption of all parks as a single composite product may not be relevant to a system of parks with different attributes and attractions, as is the case in Zambia. Finally, the study emphasizes the importance of the foreign visitors and the need to set an appropriate price for this category and accords the domestic category low priority. As noted by Walpole et al. (2001), tourism is an unstable source of revenue, particularly when it is wholly dependent on foreign tourists who are vulnerable to health scares, political development, terrorism threats, and business cycles among others. A policy to enhance domestic visitation and an appropriate price for this category is vital. Alpizar's study gives an option for policy makers for effective welfare management in National parks.

Chase et al. (1998) using primary data, developed a framework for analyzing the impact of increasing entrance fees on visitation of three popular national parks in Costa Rica, namely: Manuel Antonio, Volcan Poas and Volcan Irazu. Primary data was collected using contingent behavior analysis⁶ to generate experimental data to assess the effects of differential pricing on visitation. The data provided information to allow estimation of own and cross price elasticity's of demand. The author argued that these represented

⁶ Similar to Contingent Valuation Method (CVM) but is modified to capture how a change in entrance fees to one park affects the visitation pattern to that park and substitute parks

improvement of methodology since prices of complement and substitute parks were now able to be incorporated in the estimation of demand functions, solving one of the biggest weaknesses of contingent valuation method (CVM) studies.

The tourists demand elasticities estimated at the three parks were found to be fairly different, demonstrating the heterogeneity characterizing both tourist behavior and park attraction and amenities. The cross price elasticity that was estimated showed that substitutability in visitation demand existed between parks with similar attributes. In such cases, differential pricing could effectively push tourists from one park to another, which may be desirable in cases where there is need to decongest crowded parks. The study findings indicated that the willingness to pay high prices for the three most popular parks in Costa Rica ranged between US\$21 and US\$ 25. In addition the study calculated a revenue maximizing fee that ranged between US\$7 and US\$13 for the three parks. The study presents a conceptual framework and an empirical analysis of the impacts of introducing a differential entrance fee policy at three national parks in Costa Rica.

The Chase, *et al.*, (1998) motivated this study. The current study uses contingent behaviour methodology to elicit park visitors' behaviour in response to changes in the entrance fees.

The methods and findings of some of the reviewed studies serve as the foundation on which the current study is undertaken. Likewise, similar findings from these studies are aimed to be elicited from this research.

CHAPTER 4: METHODOLOGY

This chapter describes the methodology of the study and discusses procedures taken to arrive at the objectives. These includes, model specification that describes the methodological tools used; estimation procedures that describes the route followed in arriving at the study objectives including research design, target population, sample size, choice of study area, validity of data, data reliability, research instruments and data analysis techniques.

4.1 Model Specifications

The study follows a microeconomic theory of consumer behavior that states ‘an individual consumer maximizes his or her utility derived from the consumption of goods and services subject to his or her budget constraint’ (Gravelle and Rees, 2004). Therefore visitor to national parks are thought of as a consumer of two goods X and Q .

$$(U) = U(X, Q) \quad \text{subject to } TTC = (P_x X + P_Q Q) \quad (6)$$

Where, U is the maximising utility, X is the commodity vector, Q is the quantity of an environmental amenity (visit to a national park), TTC is the total travelling cost, P_x is commodity price and P_Q is price entrance fee to national parks.

Maximising the above constraints, utility function yields individual demand curves and aggregation across the market produces the aggregate demand curve for

$$Q = Q(TTC, P_x, P_Q) \quad (7)$$

Based on the theory and past empirical studies, aggregate demand curves for national park visitation in Zambia are expected to be a function of each park's entrance fees-including the entrance fees other parks, visitors total travelling cost, demographic characteristics and other trip related factors. The aggregate demand function for visitation to the four Zambian National Parks can be generalised as follows:

$$Q_i = Q_i(P_1, P_2, P_3, P_4; TTC_i D_i) \quad (8)$$

Where: Q_i is the aggregate visitation, i representing an individual (from a group of international visitors) during the year 2012 beginning January to December, in this case, $i=1, 2, \dots, n$; P is a vector of park entry fees to the park and substitute parks in US dollars; TTC is park visitors total travelling cost; and D_i is a vector of social-economic characteristics. Rewriting equation (8) we get:

$$Q_i = \beta_0 + \beta_1 psl_i + \beta_2 pm_i + \beta_3 plz_i + \beta_4 pk_i + \beta_5 TTCost_i + \beta_6 Drevisit_i + \beta_7 DtourOp_i + \beta_8 DageV_i + \beta_9 Dedul_i + \beta_{10} Dacompany_i + \beta_{11} Dgender_i + e_i \quad (9)$$

where psl_i , pm_i , plz_i , pk_i , $TTCost_i$, $Drevisit_i$, $DtourOp_i$, $DageV_i$, $Dedul_i$, $Dacompany_i$, and $Dgender_i$ are explanatory variables, and β 's are the unknown coefficient to be estimated. Explanatory variables include the i^{th} minimum recreation cost of each day of stay in the park during the period 2012 including, psl which is the parks own price, in this case

South Luangwa park; pm is the price at Mosi-oa-tunya park; plz , is the price at Lower Zambezi park; pk is the price at Kafue park; $TTCost$ is the total travelling cost, $Drevisit$ is whether the tourist will return to the park in the near future, $DtourOp$ is whether the visitor is using a tour operator, $DageV$ is the age of the visitor, $Dedul$ is the education level of the visitor, $Daccompany$ is whether the visitor is accompanied by family members and $Dgender$ is the sex of the tourist.

4.1.1 Factors that determine Visitation Demand

The main factors that determine the visitation demand as described in the model is the parks' own price, cross-prices, total travelling costs, 'revisits' and whether a tour operator is involved. Demographic attributes that influences the visitation demand includes age, education, gender and whether the visitor is being accompanied by family members or friends. We now justify the choice of variables used in the study.

Price

It is believed that prices of substitute locations affect recreational demand for a particular park. At the same time some tourists may believe that each national park is unique and has no substitute. The study incorporates relevant assumptions about the way Zambia Wildlife Authority operates into the estimation of optimal park entrance fees. The basis for these assumptions are that the four parks are unique and have different degrees of appeal to users; also that the park has competition from other parks in which case it helps to know the substitution and complement effects between parks. Substitute prices inclusion stems from the demand theory that states that the demand

for a good is dependent on its own price, prices of substitutes and complements, and other factors (Khan, 2004). As such, the demand for park visitation should include the prices of substitute goods.

Income

The income earned by tourists is normally included in the tourist demand equation. However, there are usually difficulties in getting respondents to declare their true income. This can result in an income variable with errors. Income is not included in the study on these grounds. Instead, total travelling cost (TTC) is used as it influences the visitation demand. The TTC includes transport costs, accommodation costs, park fees and the cost of activities inside the park. This is the total cost of travel per unit (a person and a family is treated as one unit). The total visitation cost determines the length of time one is expected to stay. The cost is generally found to have a negative correlation with park visitation demand. The higher the cost the less day's people would stay at a park.

Re-visit

Another determinant of recreation demand is revisits. It is expected that tourists who return for vacation/adventure tend to increase visitation demand.

Tour Operator

If a visitor is part of a tour, it is expected that recreation demand will increase. Tour operators are a profit making entities who advertise thereby attracting many people to visit nature based sites. Operators also arrange special packages for tourists that

incorporate different activities to different sites. This could reduce the number of days tourists stay at a particular site and increases the chance of visiting many sites included in the package.

Age

Naturally age proves to be a vital determinant of recreation demand and is expected to be inversely related. It is expected that as age increases, participation in park visits slows down.

Education

With regards to education, it is expected that people with higher education tend to appreciate natural-based tourism more than those without it. Higher education affords many people opportunities for leisure and adventure.

Gender

Gender on the other hand is another important determinant of recreation demand. It is expected that men are more likely to visit natural-based sites more than women due to economic and time factors. Men are known to earn more money than women. It is also assumed that men tend to have more time to spare for they are not limited by biological constraints such as pregnancy and child rearing.

Company

Another assumption is that tourists that are accompanied by family tend to stay longer in parks. This is because families plan to stay for longer periods unlike those that visit

alone. Table 4.1 below summarizes the dependent and independent variables and their expectations.

Table 4.1. Summary of Dependent and Independent Variables and their expectations.

Variables	Expected sign	Description
Own Price (price of park in question)	-	The price of the site in question is expected to have a negative relationship. An increase in price will reduce the visitation demand.
Cross Price(price of substitute park)	+	It is hypothesized that all parks are substitutes such that they are all expected to be positively correlated.
Total travelling costs (TTC)	-	It includes all cost associated with the trip from travel, accommodation, food etc. It is hypothesized that the number of days stayed at the park and TTC are inversely correlated.
Revisit	+	Those tourists that revisit the site tend to have a positive relationship with visitation demand.
Tour Operator	+	Tourists that use tour operators are expected to demand more, as a result will have a positive relation with visitation demand to the parks.
Age	-	It is expected that as the age increases, the visitation demand to the parks decreases.
Education	+	It is hypothesized that the higher the level of education, the more the demand for recreation. Hence it's expected to be positively related.
Gender	+	Sex of respondents 1=male and 0=female. It is expected that males visits the parks more than females.
Accompany	+	Tourists that are accompanied by family and friends tend to stay more days than those that come alone. Hence the relationship is expected to be positively correlated.

4.2 Estimation Procedures

4.2.1 Research Design

The study adopted both quantitative and qualitative approach. According to Cramer and Bryman (1997), quantitative approach is often correlational to show the tendency for such research to reveal relationship between variables. The descriptive survey design was most suitable because of its ability to elicit a wide range of baseline information about the behaviour on the visitation demand to national parks. Qualitative research seeks to understand the context of a situation, organization or group of people, of a relatively small scale, from the perspective of those involved. The purpose of qualitative research is to describe "a world of complexity and plurality" (Orum et al. 1991), and to find out what really happens. On qualitative dimension, the study applied in-depth interviews to obtain qualitative information from randomly selected tourists and because the views will be analysed statistically to arrive at objective three. Mwanje (2001) contends that in-depth interviews are characterised by extensive probing and open-ended questions. The approach was chosen because of its ability to elicit information on the parks' own price and cross price of substitute parks. The qualitative approach was able to bring out information on the actual and hypothetical scenario by tourists. The survey design was used to address the objective of the study.

4.2.2 Choice of Study Area

As discussed in 4.3.3 above, the selection of the study areas, South Luangwa, Mosi-oa-tunya, Lower Zambezi and Kafue national parks were due to the fact that these parks account for over 90% total visits of foreign tourists to Zambia during the dry season. Because of their unique features, these parks qualify for either substitutes or complements.

4.2.3 Target Population

The study targets international tourists that come to Zambia during the dry season between April and September 2012. Even though SADC tourists were included in the survey, the number was not large enough to be considered for the analysis. Therefore, only tourists coming from overseas were considered in the study.

4.2.4 Sample Size and Sampling procedure

Sample size is a critical issue of any empirical study. Fisher et al in Tibenderana and Ogao (2008) noted that in social science research the following formula could be used to arrive at the right sample size;

$$n = \frac{Z^2 pq}{d^2} \quad (10)$$

where: n , is the desired sample size (if the target population is greater than 10,000); Z , is the standard normal deviate at the required confidence level; p , is the proportion in the target population estimated to have characteristics being measured; q , is $1-p$; and d , is the level of statistical significance set. Since there were no estimates available for the proportion in the target population to have characteristics of interest, 50% or 0.5 was used for p as recommended by Fisher et al (1983). Therefore, taking a statistical significance (Z) of 1.96 at 0.05 confidence level, the sample size for this study will be;

$$n = (1.96)^2(0.5)(0.5) / (0.05)^2 \quad (11)$$

$$n = 384$$

The sample for this study is therefore 384 respondents for tourists. For purposes of attrition the study targeted 400 respondents for the interviews. However, the study drew the sample size of 366 respondents from the four most visited parks in Zambia eliciting five (5) responses from each. A total of 1830 (366×5) observations are therefore produced from the survey. Random sampling from users was used in this study. The technique has been used by many scholars including (Farber, 1988; Yaping, 1998). The study targeted natural-based tourists that visited the study sites. These parks in 2005 accounted for 95% of national park visits by foreign tourists to Zambia (ZAWA, 2010). When visitors were questioned as a family, only the man or the woman was randomly chosen instead of having every member of the family interviewed. The survey was completed on-site. It took respondents at least 30 minutes to complete the survey instrument but in cases where the investigator completed the survey tool on

behalf of the respondent with the respondent only providing the required information, it took a shorter period of 20 minutes.

4.2.5 Research Instrument

To achieve the objective of the study, two sets of data were required, primary data and secondary data. The study used both quantitative and qualitative data from primary and secondary sources. A structured questionnaire was the tool used for collecting data and other information relevant to the study. The selection of this tool was guided by the nature of the study, the time available as well as the objectives of the study. The research was mainly concerned with views, opinions, perceptions, feelings and attitudes. Such information is best collected through the use of questionnaire and interview techniques (Touliatos & Compton, 1988; Bell 1998).

The study used a structured questionnaire to source for primary data from 366 respondents (see Appendix B). Marshall and Rossman (1999) defined in-depth the qualitative interview as a conversation in which a researcher “explores a few general topics to help uncover the participant’s views,” while remaining truthful to how the participants “frames and structures the responses.” The interviewers’ role is to guide towards certain themes and not to influence the interviewee towards certain opinion (Kvale, 1983). Primary data was collected through a face-to-face interview survey which was conducted in June-July 2012, during Zambia’s tourism peak season⁷. The structure

⁷ Data collection of both primary and secondary was faced with many challenges. Travelling to each respective site was a problem considering that these places are widely isolated. With respect to Lower Zambezi national park, it was

of the questionnaire is as summarised in table 4.2. consisting of four parts: visitor's recreation behaviour, costs associated with the trip, optimal conservation fees and demographic characteristics. (see Appendix B for a full structured questionnaire)

Table 4.2. Structure of Questionnaire

Part	Content
1	Visitors recreational behaviour
2	Costs associated with the trip
3	Visitors optimal conservation fees
4	General information about the visitor

The first part consists of questions that try to know the visitors recreational behaviour. The section includes information which contains respondents' frequency of visits; most visited Africa parks in the last five years; whether they are visiting other parks on the current trip; and the main reasons for visiting a particular park. The second part of the questionnaire attempts to collect information regarding the costs associated with the trip such as the total travelling costs of the entire trip. The third part of the questionnaire was designed to elicit optimal conservation fees. The experimental question was asked hypothetically as follows, "given the current entrance fees at each of these four parks, how many days in total would you plan to spend at each of these parks

practically impossible to travel by road due to its location. Most tourists fly to the site or use 4x4 vehicles to access the area. Data collection in this park was a challenge in that movement from one lodge to another was difficult without a vehicle. Another limitation was the increase in the number of operators who could not allow us conduct the research on their premises. Reasons given were that they didn't want their visitors disturbed-as a result, the survey was delayed by one month. Generally the refusal rate by respondents randomly selected was less than 5%. Secondary data collection was met with missing information. ZAWA does not have a central data collection place. This meant visiting different offices to add-up the missing pieces of information. Even then, some reports were missing with no trace. It is a challenge getting complete information from one place in the Zambian government offices.

during the 12 month period, January to December this year?" The fourth and last part of the questionnaire asked general information about the visitor such as, gender; nationality; age; household size; education; occupation and household income.

In order to collect information regarding optimal pricing, actual and hypothetical responses to own price and cross-price increases in entrance fees at the four parks was made possible using five tables as shown below. Tables 4.3. - 4.7. illustrate how a respondent who paid the actual entrance fee of \$25 at South Luangwa, and who was later asked about a hypothetical increase in the fees.

Table 4.3. Scenario 1, actual entrance fee

Park	ACTUAL VISITS IN 2012	
	Entrance fee	Days
South Luangwa	\$25	
Mosi-oa-tunya	\$10	
Lower Zambezi	\$25	
Kafue	\$20	

Table 4.4. Scenario 2, hypothetical entrance fee of \$50

Park	ACTUAL VISITS IN 2012		HYPOTHETICAL 1	
	Entrance fee	Days	Entrance fee	Days
South Luangwa	\$25		\$50	
Mosi-oa-tunya	\$10		\$10	
Lower Zambezi	\$25		\$25	
Kafue	\$20		\$20	

Table 4.5. Scenario 3, hypothetical entrance fee of \$20

	ACTUAL VISITS IN 2012		HYPOTHETICAL 2	
Park	Entrance fee	Days	Entrance fee	Days
South Luangwa	\$25		\$25	
Mosi-oa-tunya	\$10		\$20	
Lower Zambezi	\$25		\$25	
Kafue	\$20		\$20	

Table 4.6. Scenario 4, hypothetical entrance fee of \$50

	ACTUAL VISITS IN 2012		HYPOTHETICAL 3	
Park	Entrance fee	Days	Entrance fee	Days
South Luangwa	\$25		\$25	
Mosi-oa-tunya	\$10		\$10	
Lower Zambezi	\$25		\$50	
Kafue	\$20		\$20	

Table 4.7. Scenario 5, hypothetical entrance fee of \$40

	ACTUAL VISITS IN 2012		HYPOTHETICAL 4	
Park	Entrance fee	Days	Entrance fee	Days
South Luangwa	\$25		\$25	
Mosi-oa-tunya	\$10		\$10	
Lower Zambezi	\$25		\$25	
Kafue	\$20		\$40	

Beginning with the “Actual” scenario 1 in table 4.3., the respondent was asked, "given the current entrance fees at each of these four parks, how many days in total have you

spent or do you plan to spend at each of these parks during the 12 month period, January to December this year?" After filling out the "Actual" scenario 1 with the appropriate number of days for each park, the interviewer then explain that there would be four hypothetical scenarios next, in which the fee would be raised only at one park leaving other park prices constant. In scenario 2 with a hypothetical fee of \$50 at South Luangwa, the interviewer then asks, "If the fee were increased to \$50 only at South Luangwa, how would that affect your plans to visit South Luangwa or any other national parks?" The column will then be filled in with the appropriate response in each cell; and the process would be repeated for the next three scenarios- for the cases of entrance fee increases at Mosi-oa-tunya, Lower Zambezi, and Kafue. Those who would not understand the question were explained to in order to make it clear. Though the process was time consuming, it was possible to elicit responses to these hypothetical questions through a combination of face-to-face interview and the five tables visible to both the interviewer and respondent.

4.2.6 Validity of Data

Welman and Kruger (2001), describes validity of data as "been able to implement a mechanism that successfully collects data." Validity refers to the degree under which an empirical measure sufficiently reflects the truthful meaning of the subject under investigation (Babbie, 1995). According to Oso and Onen (2005) validity of the instruments is critical in all forms of researches and the acceptable level largely depended on logical reasoning, experience and professionalism of the researcher who should have a good understanding of the various quality control techniques. The study

took the following steps in ensuring validity of the collected data. First, the survey instrument was designed with the help of a ZAWA officer (commercial manager) who has wide experience and general first-hand information of the target groups. Before the questionnaire was administered, it went through the university's research ethics committee for approval. Second, prior to conducting an interview, the interviewer explained to respondents the purpose of the study ensuring that respondents are familiar with the objective of the survey; Third, respondents were assured of anonymity and confidentiality and that the study was purely for academic purposes. This ensured aspects of openness and trust during the interview process. These steps helped in ensuring that interviews were conducted in an enabling and conducive environment that was agreeable to all parties involved.

4.2.7 Data Reliability

Michael and Craig (2010) described Reliability as a condition in which the same results will be achieved whenever the same technique is repeated in the same study. The following steps were followed to achieve this purpose. First, the anonymity and confidentiality of respondents was ensured so that they were able to provide information that was to be used purely for academic purposes. Second, during preliminary informal interviews, a rapport with respondents was created that helped ironed out concerns from him/her giving reliable responses. Third, a pre-test was done by the author during June-July 2012 - the first week of interviews was used to test the instrument. A pilot survey conducted indicated that due to limited time available to visitors coupled with excitement of easy encounter with wildlife in South Luangwa,

visitors were hardly able to spare time to respond to the survey tool at the gate. This necessitated adjustment from an earlier plan to interview respondents at the main gate to interviewing them inside the lodges and at the airports' point of exit. The airport departure wing seemed convenient for tourists for most were relaxed and excited to be spoken to. Fourth, the study was conducted by two people, the author and one assistant. The assistant, a university graduate in sociology and researcher by profession was picked based on the wide experience she had in primary data collection. The assistant was later trained prior to the survey. This ensured uniformity and reduced errors that come with having many people conducting the interview. Reliability was also assured when close to 90% of questionnaires administered, were filled in by the investigators on behalf of the respondent with the respondent only providing the required information. The process ensured that all the information required was correctly recorded.

4.2.8 Data Analysis techniques

According to Bryman and Cramer (1997), data analysis seeks to fulfil research objectives and provide answers to the research questions. The choice of analysis procedure depends on how well the techniques are suited to the study objectives and scale of measurement of the variables in question. The study applied both qualitative and quantitative approaches to process, analyse and interpret the data. Quantitative and qualitative data processing and analysis began with data editing to minimize errors. The researcher achieved this by coding the open-ended information, followed by data entry, then cleaning, transforming, analysing and interpreting. STATA was used to run

descriptive analyses to produce frequency distributions, percentages, tables and econometric estimations. Estimation of the demand curves of the four parks was made. Regression analysis using Tobit was used to measure strength of relations and marginal effects were used to calculate the elasticities. Eventually the optimal conservation fee was calculated from the estimations obtained using the 'optimal pricing model' described in chapter four.

4.3 Tobit model and Marginal Effects specifications

The coded data from the survey were arranged in a panel data set such that individual tourists interviewed had a set of five observations each. This created a total of 1830 observations. The advantage of panel data is that it combines inter-individual differences and intra-individual dynamics, allowing for more accurate inference on model parameters (less multicollinearity); constructing and testing more complicated behavioural hypotheses and a better treatment of endogeneity. After the data entry, it was found that the dependable variable had many zero values. This is due to the fact most respondents were either visiting one park or two parks and not all the four sites in the study. Chase et al (1998) suggested that if a large segment of observation on the dependent visitation variable is zero valued, classical linear regression methods will not be appropriate to be applied. This is as a result of a number of restrictions such as biased coefficients, heteroskedasticity error terms, and likelihood of meaningless probabilities and negative variances. For this reason, a Tobit model also known as 'the censored regression model' will be suitable to use to estimate the demand for visitation

at the four national parks. The Tobit model is widely used in statistical theories and methods (Amemiya 1984 1985; Maddala 1985; Greene 1993; and chase et al.1998). Its general formulation is given in terms of an index function as follows:

$$\begin{aligned}
 Y_i^* &= X_i' \beta + \varepsilon_i, \quad \varepsilon \sim N(0, \sigma^2_\varepsilon) \\
 Y_i &= 0 & \text{if } Y_i^* \leq 0 \\
 Y_i &= Y_i^* & \text{if } Y_i^* > 0
 \end{aligned} \tag{12}$$

where Y_i^* is a dependable variable (number of visits), X_i is a set of explanatory variables, the estimated β coefficients are interpreted as effects of the regressors on the latent variable. The panel data version of the Tobit model will be estimated and marginal effects of the explanatory variables on the actual outcome will be calculated. Marginal effects are traditionally estimated at the means of explanatory variables and can be interpreted as a change in the dependent variable for a given unit change in an explanatory variable. For a particular variable of interest X_k , the marginal effect is expressed as:

$$\frac{dE(y)}{dX_k} \tag{13}$$

Where $dE(y)$ is the marginal change in the expectation of y . Using marginal effects of the censored regression model, elasticities of the park visitation demand will be estimated.

4.4 Optimal Pricing Model

“Assuming that the relationship between price and quantity demanded is linear, it is possible to establish the equation of demand curve from knowing two points on the graph” (Owen, 2012). A linear demand function is given as follows:

$$Q = I - m (p) \quad (14)$$

Where Q, quantity; I, intercept; m, slope; and p is the price.

Price elasticity of demand equation over a range of demand and prices is given as, percentage change in quantity demanded divided by the percentage change in price. Since quantity demanded and price are inversely related it gives a negative result thereby confirming a downward sloping demand curve. The availability of substitutes and complements makes the slope vary in steepness as such affecting the elasticity of demand at various points along the curve.

When the price elasticity is more than one, it indicates that as prices are reduced, total revenue will increase and the opposite is true. If the price elasticity is less than one, a further reduction in price will only reduce the total revenue generated. However, when price elasticity is ‘unitary’ it means that any changes in price between two points being compared will have no effect on revenue. Therefore to maximise revenue, the point elasticity of demand (PED) equation is given as follows:

$$PED = m (P/Q) \quad (15)$$

The formula always uses the absolute value of the derivative because economists always describe PED as a (-1) negative one (Owen, 2012). Equation (15) gives a more accurate figure for elasticity of demand. The equation can further be re-arranged and simplified as:

$$P = f(Q)/m \quad (16)$$

The above analysis is used to calculate the prices at which revenue is maximised.

CHAPTER 5: EMPIRICAL RESULTS

The quantitative and qualitative information collected through questionnaire survey were coded, summarised and entered into the computer (see summary table 5.1). STATA was used to run descriptive analyses to produce frequency distributions, percentages, histograms and regression estimates. Panel Tobit regression analysis was used to estimate the park visitation demand functions and marginal effects are used to get the elasticities of each park. The optimal price model in chapter four was used to calculate the optimal conservation fee.

Table 5.1. Distribution of Respondents at the Four Parks.

National Park	Type of Questionnaires							Total
	1	2	3	4	5	6	7	
South Luangwa	11	29	10	13	16	18	10	107
Mosi-oa-tunya	10	18	14	7	15	13	11	88
Lower Zambezi	18	6	16	10	17	17	8	92
Kafue	10	0	8	7	11	16	27	79
Total	49	53	48	37	59	64	56	366

Source: statistics using data from the survey by author 2012

Visitors were surveyed at the four national parks: South Luangwa, Mosi-oa-tunya, Lower Zambezi and Kafue. Seven types of questionnaires were administered (from 1 to 7) each having different percentages of price increments ranging from 25%-125% in the hypothetical scenario. A total of 366 were administered as shown in table 5.1. above.

5.1 Socio-Demographic Attributes of the Sample Surveyed

This section discusses the social and demographic characteristics of the surveyed sample of the respondents. These include nationality, gender of the respondents, age, education level and occupations.

5.1.1 Respondents' Country of Origin

Out of the 20 countries represented in the survey, the majority group interviewed came from Australia and the USA both with 30% representation, followed by Britain with 15% and fourth was New Zealand with 4%. Other countries represented include, Greek, Netherlands, Ireland, Norway, Italy, Scotland, Belgium, Germany, France, Sweden, Hungary, Luxembourg, India, Finland and Canada.

5.1.2 Gender of Respondents

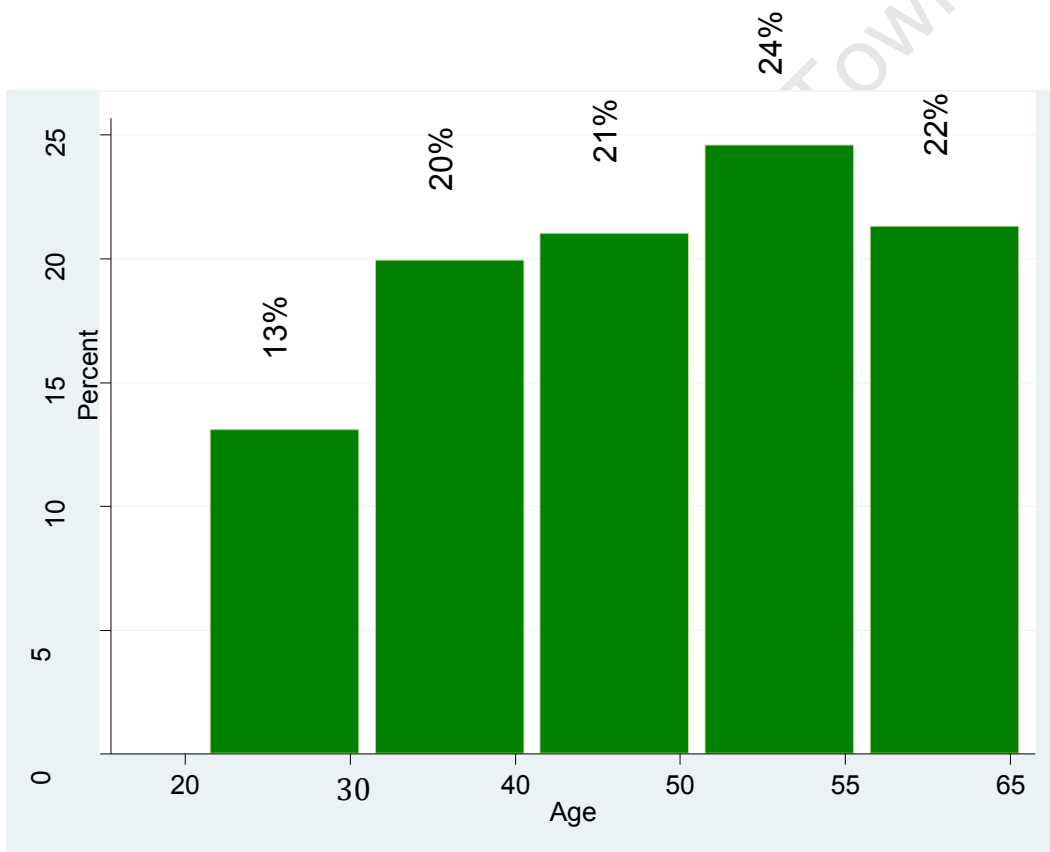
Of the 366 respondents interviewed, 226 (62%) were male while 140 (38%) were female.

5.1.3 Age Distribution of Respondents

The respondents were further asked to provide their ages. The study categorized ages of respondents into five age sets ranging as 21-29, 30-39, 40-49, 50-54, and 55-65. Out of the 366 respondents, the majority fall in the age category of 50-54 (24%) years,

followed by 55-65 (22%) and 40-49 (21%). The results show that category 50-54 are the majority and as they get older, the number decreases confirming the hypothesis that the older one gets the less likely for them to go on a trip. Many factors could lead to the results including that the older one gets the weaker they get to travel long distances. Figure 5.2 illustrates.

Figure 5.2. Age Distribution of Respondents



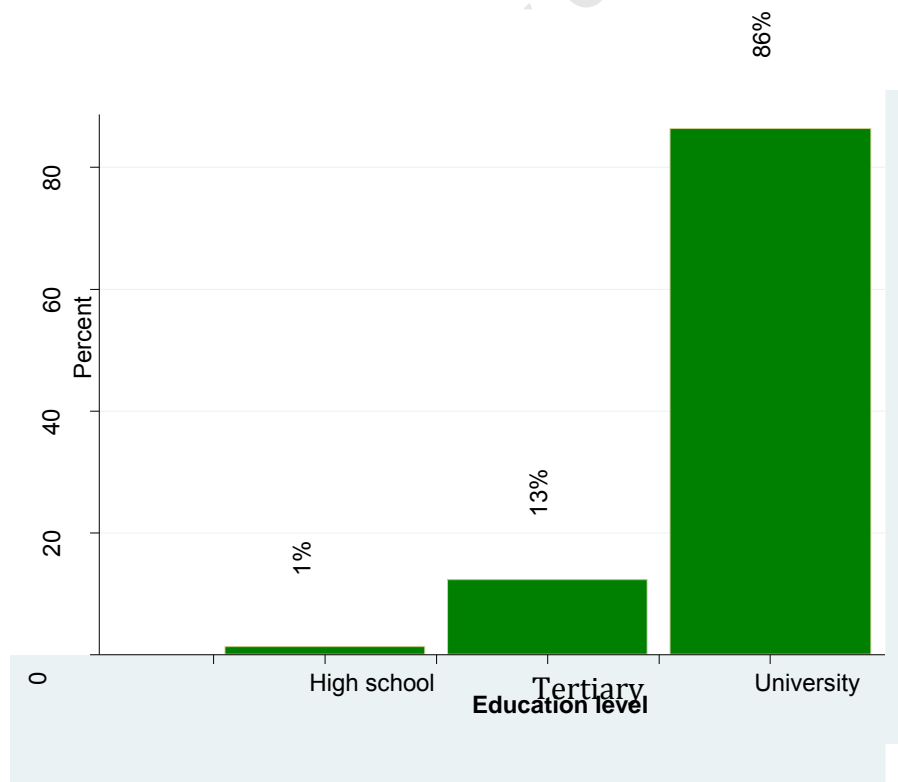
Source: Elaborated by author using survey data 2012

The minimum age group as indicated was 21 and only 1% of the respondents were in that range. The study considered age an important phenomenon since it determines which age group is more likely to visit national parks often.

5.1.4 Respondents' Education Level

Respondents interviewed were also asked of their level of education. Figure 5.3 illustrates education status. Almost all respondents had attained degree level with 86%, tertiary level is represented by 13% and only 1% went up to high school level. The results confirm the assumption that people with higher education tend to appreciate nature-based tourism more than those without it. Higher education affords many people opportunities for leisure and adventure. Knowing the level of education is important for it shows which categories of people are more likely to visit national parks.

Figure 5.3. Respondents by level of Education

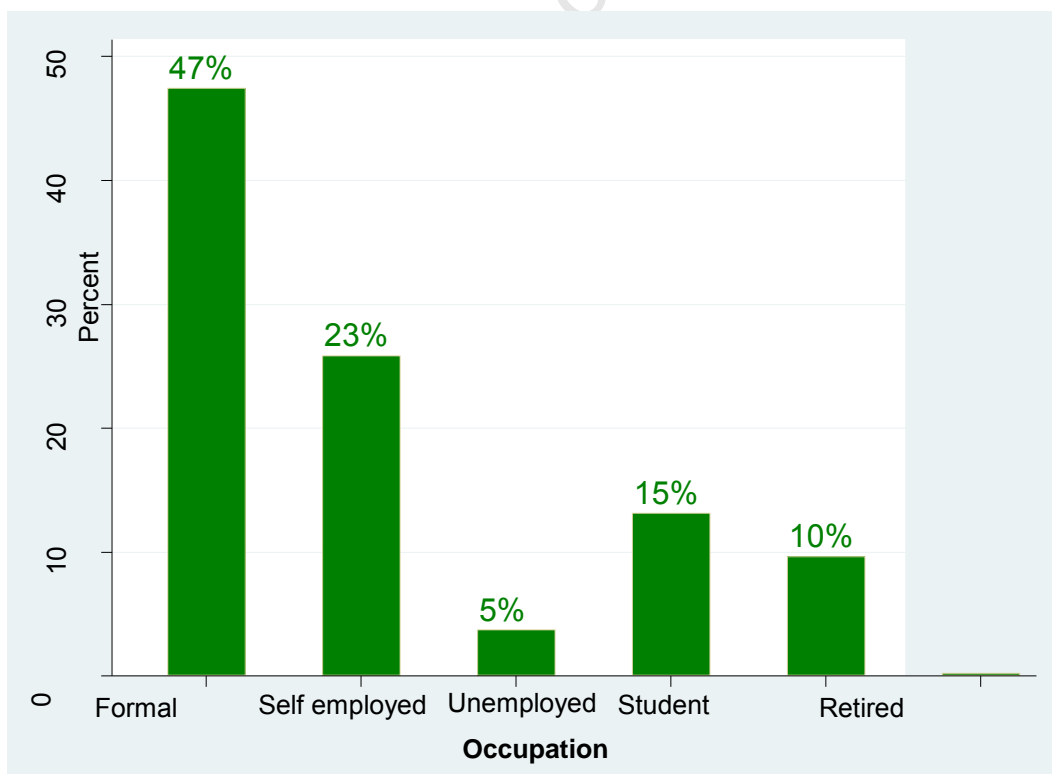


Source: Elaborated by author using survey data 2012

5.1.5 Respondents' Occupation

About 47% of visitors were in formal employment, 23% of those interviewed were self-employed and only 5% were not employed. Most of the unemployed were in the company of family and friends. A good number of respondents were students travelling as a group and on tour for the very first time. Most old people were retired who had no intentions of revisiting. Figure 5.3 shows the frequencies of respondents.

Figure 5.4. Respondents' Occupation



Source: Elaborated by author using survey data 2012

5.2 Estimation Results of the Panel Tobit Regression Model

A clear and general understanding of the national parks visitation demand pattern can be drawn from the estimated park demand equations. Table 5.2 reports results of the Panel Tobit regression models for South Luangwa, Mosi-oa-tunya, Lower Zambezi and Kafue national park.

Table 5.2. Estimated results of the Panel Tobit regression model.

Coefficient estimations (s.d)				
Dependable variables	No. of visits South Luangwa	No. of visits Mosi-oa-tunya	No. of visits Lower Zambezi	No. of visits Kafue
Intercept	4.685732*** (2.158249)	-1.158291 (1.867633)	-1.516012 (2.206569)	-3.217411 (2.105094)
Price(\$/day) South Luangwa	-.0493762*** (.0057896)	.0125826*** (.0040141)	.0399763*** (.0057852)	.228382*** (.0056708)
Price(\$/day) Mosi-oa-tunya	.0459532*** (.0129851)	-.021884*** (.009884)	.0526149*** (.0143646)	.0438064*** (.0138207)
Price(\$/day) Lower Zambezi	.0290663*** (.0051724)	.0061957 (.0039615)	-.0239362*** (.0060479)	.0183767*** (.0055887)
Price(\$/day) Kafue	.035181*** (.0000311)	.0095739* (.0050706)	.0386657*** (.0073258)	-.0419539*** (.0075066)
Total travelling cost (1000 \$)	-.0000314 (.0000311)	-.0000724*** (.0000277)	.000017 (.0000326)	.00000663 (.0000328)
Tour operator	.2196324 (.5087425)	.9426662*** (.4326678)	2.54323*** (.4700432)	-.0646447 (.5210575)
Revisit	1.607285*** (.4680653)	.982472*** (.4247022)	-.5708064 (.4891907)	1.266609*** (.4569914)
Gender	.62369* (.3844344)	.8086915*** (.3293778)	.1076136 (.3841454)	.0588002 (.3859534)
Age	-.0936263*** (.0179878)	.0155061 (.0155662)	.0072995 (.0182363)	-.0432189*** (.0185485)
Education	-.9379368*** (.4667158)	.0994525 (.4070303)	-.8810864 (.4779273)	.4243626 (.4461209)
Accompany	1.138177*** (.2381791)	.078033 (.2009072)	.0872769 (.2409605)	.0172612 (.2407164)

***significant at 1% level, **significant at 5% level, *significant at 10% level

As expected, own-price coefficients have negative signs and are significant. The cost incurred by individuals when fees increases are inversely related to visitation days. Implying that as entrance fees increases, visitation reduces. Cross-price estimates are positive and significant for all parks except mosi-oa-tunya which only has South Luangwa significant at 1% and Kafue significant at 10% level. This confirms the expected substitute demand relationship between them. It implies that an increase in the entrance fee at one park only, visitation at the other parks will increase. Total travelling cost is only significant at Mosi-oa-tunya. The negative sign is as expected because an increase in the cost reduces visitation days. Tour operator is positive and significant only at Mosi-oa-tunya and Lower Zambezi. Lower Zambezi is not easily accessed as such operators arrange for packages that incorporate mosi-oa-tunya and Lower Zambezi. The positive sign is as expected since tourists that use tour operators are expected to have a higher visitation demand. With regard to visitors that revisit the park, South Luangwa, Mosi-oa-tunya and Kafue have positive signs which are significant implying that tourists who return for vacation tend to increase visitation demand. These three parks are easily accessible and has good communication network. On the other hand, Lower Zambezi is difficult to access especially by road. It has poor communication network and the operators are dispersed making it difficult for tourists to change camps. Variable gender is only important at two parks, positively signed and significant at South Luangwa and Mosi-oa-tunya. The results conform to the expectations that male visitors out-number female visitors as such more male visits the park. Age is only a factor in two parks, South Luangwa and Kafue, negatively signed and significant as expected. Education is significant with a negative sign in South Luangwa. This suggests that lower educated tourists visited South Luangwa more than highly educated people

during the period in question. The variable representing ‘accompanying’ is positive and significant only in South Luangwa. The majority of tourists that come to Zambia visit the park more than any other. The results conform to the expectations.

5.3 Demand Elasticities of Park Visitation

Using marginal effects of the censored regression model, elasticities of the park visitation demand are estimated. The own-price and cross-price elasticities are shown in table 5.3.

Table 5.3. Estimated elasticities of park visitation demand.

Dependable variables	No. of visits South Luangwa	No. of visits Mosi-oa-tunya	No. of visits Lower Zambezi	No. of visits Kafue
Price(\$/day) South Luangwa	-0.9127914*** (.0057896)	0.15453674*** (.0040141)	0.900492*** (.0057852)	0.570957*** (.0056708)
Price(\$/day) Mosi-oa-tunya	0.3426597*** (.0129851)	-0.10800730*** (.009884)	0.4757377*** (.0143646)	0.43956*** (.0138207)
Price(\$/day) Lower Zambezi	0.37741942*** (.0051724)	0.0741708 (.0039615)	-0.53050131*** (.0060479)	0.4524388402*** (.0055887)
Price(\$/day) Kafue	0.51919836*** (.0066)	0.0935266* (.0050706)	0.6937198*** (.0073258)	-0.83654812*** (.0075066)

***significant at 1% level, **significant at 5% level, *significant at 10% level

The calculated elasticities are done using variable means. The main diagonal records own-price elasticities of each parks’ demand – each giving a negative sign thereby confirming the inverse relationship between price and quantity demanded. South Luangwa and Kafue records near unit ‘1’ elastic, while Lower Zambezi indicates a unit ‘0.5’ elasticity with Mosi-oa-tunya recording a ‘0.1’ elasticity.

The cross-price elasticities are positive and significant for all parks except Mosi-oa-tunya indicating their substitute relationship. Implying that an increase in the conservation fee of any of the parks will cause tourist move to other parks. An increase in park entrance fees at Mosi-oa-tunya national park will have no effect on the visitation demand at Lower Zambezi. The low elasticities recorded above are as a result of its short-term nature and show that there is scope to increase entrance fees at Zambian national parks. Even though studies have indicated that long term elasticities tend to be higher. We believe that they will not be higher as we are dealing with international tourists for whom entrance fees only constitutes a small expense in their travel budgets (Walsh, 1986).

5.4 Optimal Entrance Fee and Policy

With the estimates obtained, decision makers can use them in redesigning prices in such a way that the optimal entrance fee is obtained. The study has estimated optimal entrance fees using the analysis given in 4.4 “optimal pricing model”. Table 5.4 below summarises the results.

Table 5.4. Optimal Park Revenue

Parks					
		South Luangwa	Mosi-oa-tunya	Lower Zambezi	Kafue
Actual fees					
Actual fees (\$)		25	10	25	20
Optimal fees					
Revenue maximising fee (\$)		107.5	22.48	25.8	29.52
Choke fee(\$)		213.88	44.71	51.69	58.75

Source: Calculations using survey data by author 2012.

The 'actual fees' are the fees which ZAWA is currently charging per person per day. The 'Optimal fee' are the estimated fees based on demand elasticities derived from the survey data. The results show optimal fees would rise from \$25 to \$107.5 per day for South Luangwa national park, and \$10 to \$22.48 per day for Mosi-oa-tunya national park. Lower Zambezi's fee will increase from \$25 to \$25.8 while Kafue's fees will increase from \$20 to \$ 29.52 per day. A high rise in price at South Luangwa confirms the popularity of the park. A rise in fees for international tourists in these parks would not face much contest because the group is willing to pay more than is currently been charged. Going by the high 'choke price' tourists are willing to pay over double what is currently been charged.

The adoption of the differential pricing approach to setting entrance fees would result in more revenue generation for all parks. A differential pricing approach would allow ZAWA to take advantage of visitors' varying demand elasticities by charging fees appropriate to specific demands for park attractions and attributes. As a result, revenue generation goals would be achieved.

Revenue-generation is important especially when it comes to effective management of the parks. However, it is important to take into account factors that would be affected by the increase in entrance fees. The increase in the fees would have implications such as: (i) the negative local economic impacts of high fees that reduces park visitation demand - affecting revenue levels for park operators who might reduce its work-force in an effort to cut on the operating costs; (ii) the reduction in the government revenues due to reduced number of visitations to Zambia among others to name a few.

5.5 Selected Summary of Descriptive Statistics

The data gathered through the Contingent Behaviour questionnaire resulted in a data set consisting of 5 observations for each of the 366 respondents giving a total of 1830 tourists. Selected mean results from the survey of visitors to the four parks are presented in table 5.5.

Table 5.5. Summary of Selected Results for International Tourists (Mean Values)

Activity	South Luangwa (n=107)	Mosi-oa-tunya (n=88)	Lower Zambezi (n=91)	Kafue (n=80)
Actual fee paid	\$27.42	\$10.98	\$26.97	\$21.98
Appropriate fee	\$28.35	\$27.52	\$27.86	\$27.84
Willingness to pay	\$54.70	\$61.85	\$55.27	\$54.10
Actual number of days in park	3	3	3	3
Number of days if fees increased	2	2	2	2
Number of days if no fees	5	5	4	4

Source: values calculated using survey data 2012

The actual fees paid and numbers of days were collected at each respective park and are based on visitor's actual behaviour at the park. On average Mosi-oa-tunya has the lowest fee with \$10.98. The lower fee is a strategy that ZAWA used in order to remain competitive with adjacent park in Zimbabwe whose price is lower compared to other parks in Zambia. With regard to appropriate fee, respondents were asked, "In your view, what entrance fee per person per day do you consider to be appropriate for international tourists entering the following parks?" The amount was then entered at each respective park. The results show an average of \$28 for all parks. A willingness to pay question was asked: "at what amount would you decide not to visit this park?" On average Mosi-oa-tunya national park fee is higher than all the other parks with \$61.85. With regards to park fee increment, a hypothetical question was: "if the fee were increased only at one park, how many days in total would you plan to spend at each of these parks during the 12 month period, January to December this year?" As expected, the numbers of days when fees are increased are less at all parks relative to actual days and days when there are no fees. On average, South Luangwa and Mosi-oa-tunya has 5

days while Lower Zambezi and Kafue has 4 days respectively when no fees are charged indicating that tourists are responsive to changes in price.

CHAPTER 6: CONCLUSION AND RECOMENDATION

The study investigated the optimal entrance fees for national parks in Zambia. The specific objectives were to collect the required data for the analysis through a primary survey, estimate the demand function of individual tourists that would show the elasticities for price and cross price and to finally determine the optimal conservation fee the parks in question. The issue that inspired the study was the poor financial performance that ZAWA has been experiencing over the years and its perpetual dependence of dwindling government funding for its operations. The prevailing theoretical and empirical literature suggests an upward increment in the park entrance fees as one form of revenue generation. The results from this study will help policy makers make informed decisions regarding park pricing.

The study used contingent behavioural approach to elicit the information required. The methodology involved surveys of subjects responding to actual and hypothetical scenarios involving various pricing and visitation options. The case study for South Luangwa, Mosi-oa-tunya, Lower Zambezi and Kafue will help policy makers understand the role the economic analysis plays in the management of protected areas. The demand elasticities estimates confirm the heterogeneity characterising tourist's behaviour and park attributes and amenities. The cross-price elasticities estimates show that substitutability exists between parks. This entails that increasing a pre-existing differential fee can effectively influence tourists to move from one park to the next. The move could be desirable if there's need to curb overcrowding also if there's a need to encourage local economic development at another park.

The study established that the current price set-up at the four parks are not optimal. There is a greater scope to raise more revenue from a raise in entry fees, as evidenced by the estimates. Based on the above findings, this study recommends that ZAWA could experiment with a price increase of upto US\$107.5 for South Luangwa, US\$22.48 for Mosi-oa-tunya, \$25.8 for Lower Zambezi and \$29.52 for Kafue national park. This price increase will yield more revenue.

Optimal entrance fee is but one way of generating income. Even though the amount could be substantial, it is not certain whether national parks could fund themselves wholly. The fund from government and donor grants from international community are still instrumental in the operations of protected areas. However, it is always prudent to increase the resource base through innovative non-consumptive sources.

Recommendations

After nearly thirteen years of operations as an autonomous institution, ZAWA continues to experience fiscal challenges that curtail its ability to fully implement its mandate. Something can be done to help ease the burden.

The study shows that current park entrance fee is sub-optimal and that it is possible to charge more without significant change in tourism consumption. This is a good step to the right direction of enhancing ZAWA's revenues at the same time improving service delivery. The current revenue base relies more on hunting concessions with at least 45% of total revenue being generated through hunting concessions. The intents and

purpose for issuing hunting concessions should ordinarily be to balance the ecosystem and not necessarily to make money. This approach should therefore not be depended upon as a key revenue source.

Diversification and expansion of revenue base is inevitable. Away from hunting concessions the study revealed that ZAWA can make a lot of money from non-consumptive sources such as park entry fees. Others revenue sources that would require further research include photographic safari; lease of tourist sites; green safaris, PPP investments to name a few.

As with most situations the recommendations given may not offer an ideal, single panacea to all ZAWA's ills. Equally, it is unlikely that the potential advantages they offer will be realized without a clear understanding of the current institutional and political governance, and most importantly, of ZAWA's ability and willingness to effect the change.

REFERENCE

- Abala, D. O. (1987). "A Theoretical and Empirical Investigation of the Willingness to Pay for Recreational Services: A Case Study of Nairobi National Park." *Eastern Economic Review* 3:111-119.
- Adamowicz, W., J. Louviere, and M. Williams. (1994). "Combining Revealed and Stated Preference Methods for Valuing Environmental Amenities." *Journal of Environmental Economics and Management* 26 (3):271-92.
- Allison, Paul D. (2009) "Fixed effects Regression." Thousand Oaks, CA: Sage Publications.
- Alpizar F. (2006). "The pricing of protected areas in nature-based tourism: A local perspective-Costa Rica". *Ecological Economics* 56 (2006) 294–307
- Amemiya, T. (1984). "Tobit models: a survey." *Journal of Econometrics* 24, 3 – 61
- Amemiya, T. (1985). "Advanced Econometrics." *Basil Blackwell, Oxford, UK*.
- Arin, T. and E. Sills. (2001), "Developing Tourism to National Parks in the Republic of Georgia." *World Bank, Washington*.
- Babbie, E. (1995). "The practice of social research." *London: wadsworth*.

- Barns, J.I (1996). "Economic characteristics of the demand for wildlife viewing tourism in Botswana." *Development Southern Africa* 13(3). Pp.377-97.
- Beal, D.J. (1995). "Sources of variation in estimates of cost reported by respondents in travel cost surveys." *Australian Journal of Leisure and Recreation* 5(1): 3-8.
- Bhat, C. R., and Gossen, R. (2004). "A mixed multinomial Logit model analysis of weekend recreational episode type choice." *Transportation Research Part B*, Vol. 38, pp767-787.
- Boardman, A.E., Greenberg, D.H., Vining, A.R. and Weimer, D.L. (2006). "Cost-benefit analysis." *concepts and practice (3rd ed.)*, New Jersey: Pearson Prentice Hall.
- Booth, Vernon, Lengwe. (2007). "Mid-term review of the programme of the development of Kafue National Park as a model of sustainable economic use and Bio-diversity conservation in a management extensive environment". *Report to NORAD/SEED*, Lusaka.
- Bryman, A., and Cramer, D. (1997). "Concepts and Theories of Measurement in quantitative data analysis with SPSS for windows." *A Guide for social Scientists*.
- Carlton, D. and Perloff, J. (2004). "Modern Industrial Organization," Sydney: The Addison-Wesley Series in Economics.

Carlton, D and Perloff, j. (2005) "Morden Industrial Organisation, 4th Edition," *Pearson Addison Wesley*.

Chase, L.C., Lee, D.R., Schulze, W.D., Anderson, D.J. (1998). "Ecotourism demand and differential pricing of national park access in Costa Rica." *Land Economics* 74 (4), 466–482.

Child and Lee, (1993). "Reorganization and Restructuring the Department of National Parks and Wildlife Service."

Child, B. & Dalal-Clayton, B. (2004). "Transforming Approaches to CBNRM: Learning from the Luangwa Experience." Book by McShane, T. O. and M. P. Wells (eds.), *Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development. New York: Columbia University Press.*

Chirwa, Joan (2007). "Manning demands prosecution of culprits in Legacy Holdings area saga." *the post Newspaper*, Lusaka, 23 July.

Chulu, Kabanda and Chirwa, Joan (2007). "Kaingu queries ZAWA, The post Newspaper", *Lusaka, 5 January.*

Chundama, M., Gumbo, D., Mulonani, D., & Kalyocha, G (2004). "Institutional and Policy Analysis for Protected Areas under the Reclassification of Zambia's Protected Areas Systems Project." World Wide Fund for Nature Southern Africa Regional

Conservation Programme WWF Zambia Report to the Ministry of Tourism
Environment and Natural Resources.

Clawson, M, and Knetsch, J. L (1966). "Economics of Outdoor Recreation, *Washington.*"
DC. Resources of the Future.

Cummings, R. G., D. S. Brookshire, and W. D. Schulze. (1986). "Valuing Environmental
Goods: An Assessment of the Contingent Valuation Method." Savage, MD:
Rowman and Littlefield Publishers, Inc.

Durojaiye, B. O. and A. E. Ipki. (1988). "The Monetary Value of Recreational Facilities in a
Developing Country: A Case Study of Three Centres in Nigeria." *Natural
Resources Journal* 28:315-28.

Farber, S. (1988), "The Value of Coastal Wetlands for Recreation: An Application of
Travel Cost and Contingent Valuation Methodologies", *Journal of Environmental
Management*, 26: 299-312.

Fisher, A., Laing, J. & Stoeckel, J. (1983). "Guidelines for overcoming design problems in
family planning operations research." *Mediline*.16 (2): 100-105

Gareth, W.O. (2012). "Applying point elasticity of demand principles to optimal pricing
in management accounting." *Applied Economics and Finance Journal* 6 (3): 89-99,
2012

Glassman, J. & Rao, V. (2011). "Evaluating the Economic Benefits and Future Opportunities of the Maine Island Trail Association." Unpublished Master's thesis, *Harvard Kennedy School*, Boston.

Gibson C.C. & Marks, S.A. (1995). "Transforming Rural Hunters into Conservationists: An Assessment of Community-Based Wildlife Management Programs in Africa." *World Development*, 23 (6), 941-957.

Gomez-Pompa A. and A. Kaus (1992) "Taming the Wilderness Myth", *Bioscience*, 42(4): pp 271-279.

Government of the Republic of Zambia. (2006). "Fifth National Development Plan 2006-2010." *Ministry of Finance and National Planning* Lusaka, Zambia.

Government of the Republic of Zambia. (2002). "Poverty Reduction and Strategy Paper." *Ministry of Finance and National Planning*. Lusaka, Zambia.

Greene, W. H. (1993). "Econometric Analysis," 2nd Edition. *Macmillan Publishing Company*, New York.

Echeverra, J., M. Hanrahan, and R. Solorzano. (1995). "Valuation of Non-priced Amenities Provided by the Biological Resources within the Monteverde Cloud Forest Preserve, Costa Rica." *Ecological Economics* 13:43-52.

Hamilton, K., Tembo, G., Sinyenga, G., Bandyopadhyay, S., Pope, A., Guillon B., Muwele B., & Pavy J. (2007). "The real economic impact of Nature Tourism in Zambia." *Natural Resources Consultative Forum*.

Hotelling, H. (1931), "The Economics of Exhaustible Resources," *Journal of Political Economy*, 39, 137-175.

ICC, (2002). "Zambia Wildlife Authority Five-Year Strategic Plan 2003-2007." Main Report, *Chilanga Zambia*.

IUCN (1994). "Guidelines for Protected area management categories." IUCN, *Gland, Switzerland and Cambridge, UK*.

IUCN/UNEP/WWF. (1991). "Caring for the Earth: A Strategy for Sustainable Living. *Gland, Switzerland*."

Isangkura, A. (1998), "Environmental Valuation: An Entrance Fee System for National Parks in Thailand." EEPSEA Research Report Series, Economy and Environment Program for Southeast Asia, *Tanglin, Singapore*.

Khan H (2004) "Demand for Eco-tourism: Estimating Recreational Benefits from the Margalla Hills National Park in Northern Pakistan."

- Kvale, S. (1983). "The qualitative research interview: a phenomenological and hermeneutical mode of understanding." *Journal of Phenomenological Psychology*, 14, 171-196.
- Laarman, J. G., & Gregersen, H. M. (1996). "Pricing policy in nature-based tourism." *Tourism Management*, 17(4), 247.
- Layman, R. G., J. R. Boyce, and K. R. Criddle (1996). "Economic Evaluation of the Chinook Salmon Sport Fishery of the Gulkana River, Alaska, under Current and Alternate Management Plans." *Land Economics* 72 (Feb.): 113- 28.
- Lewis, D. & Alpert, P. (1997). "Trophy Hunting and Wildlife Conservation in Zambia." *Conservation Biology*. 11 (1).
- Lindberg, K., and R. L. Johnson. (1994). "Estimating Demand for Ecotourism Sites in Developing Nations." *Trends* 31:10-15.
- Lindberg, K (1991) "Policies for maximising nature tourism's ecological and economic benefit." Washington, D.C.: *World Resource Institute*.
- Lindberg, K(1991) "Protected area visitors fees." Cooperative Research Centre for Sustainable Tourism Griffith University, PMB 50 Gold Coast, Qld 9726 Australia.

- Loomis, J. B. (1993). "An Investigation into the Reliability of Intended Visitor Behaviour." *Environmental and Resource Economics* 3:183- 91.
- Maddala. G.S. (1985). "Limited-dependent and qualitative variables in econometrics." *Cambridge University Press*. Cambridge.
- Manning, I. P. A. (1986). "A preliminary proposal for a management-cum-tourism lease of the North Luangwa National Park, Zambia." Typescript proposal to the African Wildlife Leadership Foundation, Washington, USA.
- Manning I.P.A. (2006a; 2007a, b, c, d). Internet BlogSpot's
- Manning, I.P.A (2011), "Wildlife Conservation in Zambia and the Landsafe Customary Commons." Master's thesis, University of Pretoria, Pretoria South Africa.
- Marshall, C., & Rossman, G. B. (1998). "Designing qualitative research (3rd ed.)." *NewburyPark*: Sage Publication.
- Marshall, C. and Rossman, G.B. (1995). "designing qualitative research." Thousand Oaks, Calif: Sage Publications.
- Mendes,I. (2003). "Pricing Recreation Use of National Parks More Efficient Nature Conservation: An Application to the Portuguese Case." *European Environment*, 13, 288-302.

- Micheal M and Craig B (2010). "How reliable are the results from functional magnetic resonance imaging?" *Annals of the new york academy of sciences*.
- Moran, D. (1994). "Contingent Valuation and Bio-diversity: Measuring the User Surplus of Kenyan Protected Areas." *Biodiversity and Conservation* 3:663-84.
- Mungatana, E. D., and S. Navrud. (1994). "Environmental Valuation in Developing Countries: The Recreational Value of Wildlife Viewing." *Ecological Economics* 11:135-51.
- Mwanje, J.I, (2001), "Qualitative Research Process: Social Science Research Methodology Series." Module II. *Addis Ababa*: OSSREA
- Nkoma, G, A. (2009). "Report on ZAWA/SLAMU Nyimba CBNRM Unit to SLAMU Petauke on salary arrears in respect to Luembe and Nyalugwe CRBs." 26 May 2009.
- Ooi, Jin-Bee. (1982). "Commonwealth Geographical Bureau. Natural Resources in Tropical Countries." Singapore: Singapore University Press Proprietary, Limited.
- Orum, A.M., J.R. Feagin, and G. Sjoberg (1991). Introduction: The Nature of the Case Study, In: Feagin, J.R., A.M. Orum and G. Sjoberg (eds.). *A Case Study for the Case Study*. the University of North Carolina Press, Chapel Hill.

Oso, W. Y and Owen David (2005); "A General Guideline to Writing Research Proposals and Reports."

Pitman, Col. C.R. S. (1934). Report on the Faunal Survey of Northern Rhodesia, 1934.

Peace Parks Foundation (2008). "Integrated Development Plan: Zambian Component of the KAZA TFCA," xiii + 153 pp

Pearse, P. H. (1968). "A New Approach to the Evaluation of Non-priced Recreational Resources." *Land Economics* 44 (Feb.):87-89.

Report of the Commission of Inquiry into the Salaries, Salary Structures and Conditions of Service of Zambia, Vol. 1, the Public Services and Parastatal Sector (Lusaka, 1975), P. 130.

Shultz, S., J. Pinazzo, and M. Cifuentes. (1997)."Opportunities and Limitation for Contingent Valuation Surveys to Determine National Park Entrance Fees: Evidence from Costa Rica." Selected Paper presented at Annual Meetings of American Agricultural Economics Associations, Toronto, Canada.

Silwamba, Chibaula and Habbuno, Magarate. (2009). "Norway demands removal of ZAWA director." *The post Newspaper*, Lusaka, 12 June.

- Simasiku, P., Simwanza, H.I., Tembo, G., Bandyopadhyay, S., & Pavy, J. (2008). "Game Management Areas in Crisis." The impact of wildlife management policies on communities and conservation. Natural Resources Consultative Forum.
- Tibenderana P. and Ogao P (2008). "Information Communication Technologies Acceptance and Use Among University Communities in Uganda" A Model for Hybrid Library Services End-Users.
- Tobias, D. and R. Mendelssohn, (1991). "Valuing ecotourism in a tropical rain-forest reserve." *AMBIO* 20: 91-93.
- Touliatos J. S and Compton, N. H. (1988). "Research Methods in Human Ecology/Home Economics." *Iowa State University Press/AMES*.
- Ward, F. A. (1987). "Economics of Water Allocation to Instream Uses in a Fully Appropriated River Basin: Evidence from a New Mexico Wild River." *Water Resources Research* 23: 381-92.
- Walpole, M.J., Goodwin, H.J., & Ward, K. G. R. (2001). "Pricing Policy for Tourism in Protected Areas: Lessons from Komodo National Park, Indonesia." *Conservation Biology*, 15(1), 218-227.
- Walsh, R. G. (1986). "Recreation Economic Decisions: Comparing Benefits and Costs." Venture Publishing, Inc., Pennsylvania.

Welman, J.C. & Kruger, S.J. (2001). "Research methodology." Cape Town: Oxford Southern Africa

Wennergren, E. B. (1964). "Valuing Non-market Priced Recreational Resources." Land Economics 40 (Aug.):303-14.

World Bank, (2006). "The largely untapped potential tourism in Zambia draft report: Trade in services." world bank/Lusaka .

World Bank, (2007). "Zambia Economic and Poverty Impact of Natural-based Tourism." Central Statistics Office, Zambia. 2006. Living Conditions Monitoring Survey (LCMS). Available at <http://www.zamstats.gov.zm>

World Travel and Tourism Council, (2012). Available from <http://www.wttc.org/research/economic-impact-research/country-report/Zambia>.

Zambia Tourism Profile (2011). "Zambia tourism sector profile." Report by Zambia Development Agency, Lusaka Zambia, February 2011.

ZAWA. Zambia Wildlife Act (1998). Available from: <http://www.zawa.org.zm>.

ZAWA. (2000). 'Zambia Wildlife Authority National Report', report for the thirteenth session workshop on working party on wildlife management and national parks, Lusaka, Zambia.

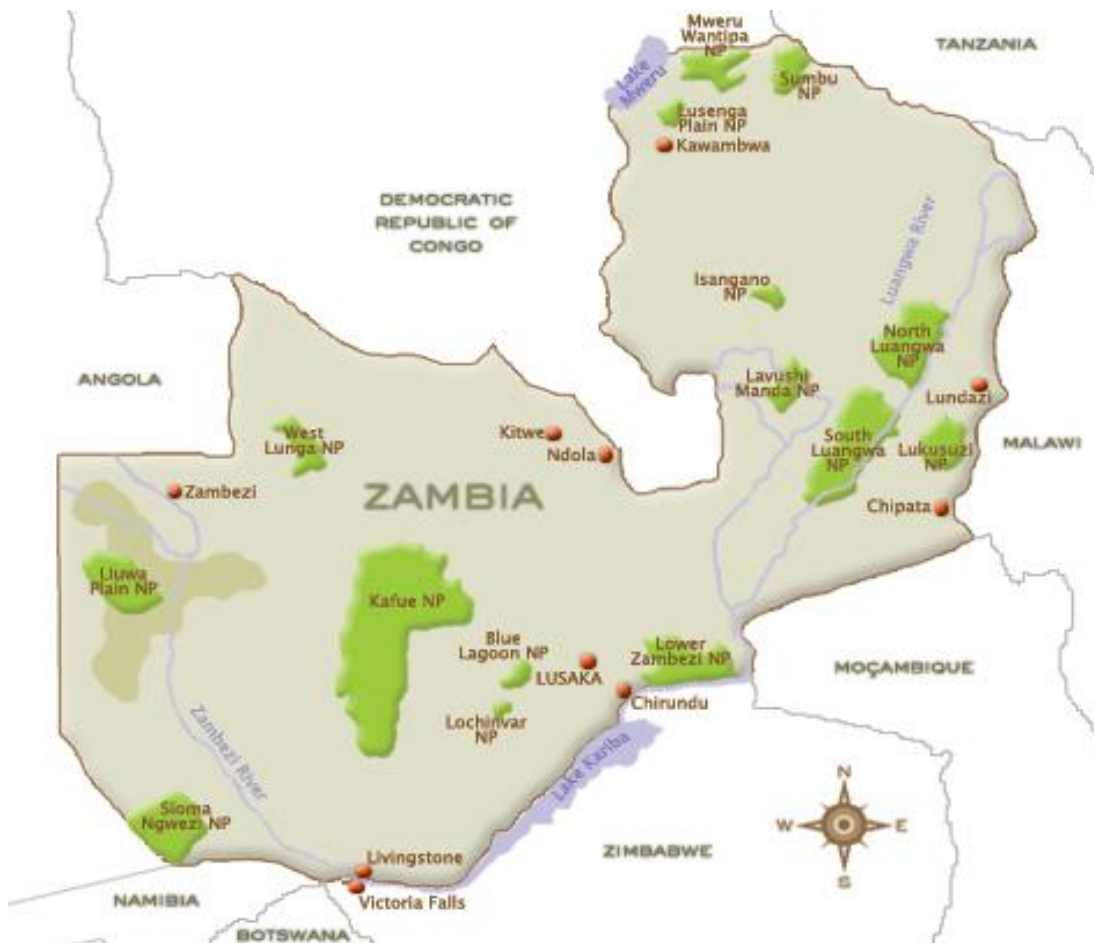
ZAWA. (2002). Five-Year Strategic Plan 2003-7, Volume One, Main Report, Lusaka, Zambia

ZAWA. (2008). Available from [http:// www.zawa.org.zm](http://www.zawa.org.zm).

University of Cape Town

APPENDICES

Appendix (A) Map of Zambia showing Protected Areas.



Appendix (B) Tourist Interview Guide

QUESTIONNAIRE ON DETERMINING APPROPRIATE ENTRANCE FEES FOR ZAMBIAN NATIONAL PARKS

INTRODUCTION

Hello, my name is ... I am a Masters student in Economics at the University of Cape Town. My study is on the determination of optional entrance fees to the national parks in Zambia. Charging appropriate entrance fees for national parks may be used to generate adequate revenue to carry out conservation in the parks estate and thereby offset the dwindling tax-based government funding to the national parks agency, ZAWA.

In order to answer the research question in this study, we have to carry out surveys to find out visitors' responsiveness to various entrance fee levels.

The University of Cape Town Ethics research committee approved the instrument.

Participation is voluntary; and you are free to withdraw from participation at any time.

The interview will not take more than 30 minutes.

Any responses given by respondents will remain confidential and will only be used in a highly aggregated way such that no one can identify your specific answers.

While this research is largely academic, we will share the broad recommendations from it with the national parks agency, ZAWA.

I have randomly selected you to be part of the survey. Are you willing to participate?

Thank you! [if yes] I would like to remind you that any information you provide is important as it may contribute towards the setting of appropriate entrance fees that visitors to the national parks in Zambia should be asked to pay. I therefore appeal for your honest responses to ensure the success of this research project.

Name of Interviewer: _____

Name of national park:

Date: ____/____/2012

A. VISITOR'S RECREATIONAL BEHAVIOUR

1. HOW MANY TIMES DID YOU VISIT AFRICAN NATIONAL PARKS IN THE LAST FIVE YEARS?
2. HOW MANY DAYS IN TOTAL DID YOU SPEND In THESE PARKS?

3. WHICH WERE YOUR THREE MOST VISITED AFRICAN NATIONAL PARKS IN THE LAST FIVE YEARS?

NAME OF NATIONAL PARK	YEAR	ENTRANCE FEE	fee STRUCTURE (DAILY, ONCE-OFF, ETC)

4. HOW MANY TIMES HAVE YOU VISITED THIS NATIONAL PARK BEFORE?

5. HOW DID YOU GET TO KNOW ABOUT THIS PARK?

6. ARE YOU USING A TOUR/SAFARI OPERATOR FOR THIS VISIT?

YES

NO

7. ARE YOU STAYING IN ACCOMMODATION INSIDE THIS PARK?

YES

NO

8. HOW MANY MEMBERS OF YOUR HOUSEHOLD ARE ACCOMPANYING YOU TO THIS PARK?

9. WHAT IS YOUR MAIN ATTRACTION IN THIS PARK?

ATTRACTION	TICK ALL APPLICABLE
WATERFALLS	
WALKING TOURS	
FLOOD PLAINS	
GAME/BIRD VIEWING	
WATER-BASED ACTIVITIES	
OTHERS (SPECIFY).....	

10. HAVE YOU VISITED OR ARE YOU VISITING OTHER PARKS IN ZAMBIA OR NEIGHBOURING COUNTRIES DURING YOUR CURRENT HOLIDAY TRIP?

YES

NO

11. IF YES, HOW LONG DO YOU PLAN TO (OR DID YOU) STAY IN OTHER PARKS?

NAME OF PARK	PLANNED OR ACTUAL	DAYS IN THE PARK	ENTRY FEES PER DAY

B. COSTS ASSOCIATED WITH THIS TRIP

12. HOW MUCH ARE YOU SPENDING (IN TOTAL) FOR THIS VISIT: US\$.....
13. HOW MUCH DID YOU PAY AS ENTRY FEE TO THE PARK: US\$.....
14. HOW MUCH DID YOU SPEND IN TOTAL ON TRAVEL TO THE PARK: US\$.....
15. HOW MUCH DID YOU SPEND ON ACCOMODATION INSIDE THE PARK (WHOLE PERIOD):
US\$.....
16. HOW MUCH DID YOU SPEND ON ACCOMADATION OUTSIDE THE PARK (WHOLE PERIOD):
US\$.....
17. WHAT ACTIVITIES DID YOU (*OR ARE STILL TO*) PARTICIPATE IN WHILE AT THE PARK?

ACTIVITY	TICK THE APPLICABLE OPTION
NONE	
GAME-DRIVE ACTIVITIES	
SELF GUIDED DRIVES	
BIRD WATCHING	
WILDLIFE VIEWING	
DAY WALK ACTIVITIES	
HIKING TRAILS	
WATER FALLS	
OTHER (specify)	

18. HOW MUCH DID YOU SPEND IN TOTAL ON THESE ACTIVITIES IN THE PARK: US\$.....

C. VISITOR OPTIMAL CONSERVATION FEES

I WILL PRESENT FIVE SCENARIOS ABOUT **DAILY ENTRANCE FEES** CHARGED AT THE FOUR MOST POPULAR NATIONAL PARKS IN ZAMBIA IN 2012. THE FIRST SCENARIO IS REAL AND THE REST ARE HYPOTHETICAL. I WOULD LIKE YOU TO TELL ME YOUR VISITATION RATES IN 2012 UNDER EACH SCENARIO.

- 19. SCENARIO 1:** GIVEN THE CURRENT ENTRANCE FEES AT EACH OF THESE FOUR PARKS: SLNP, MNP, LZNP & KNP, HOW MANY DAYS IN TOTAL HAVE YOU SPENT OR DO YOU PLAN TO SPEND AT EACH OF THESE PARKS DURING THE 12 MONTH PERIOD, JANUARY TO DECEMBER THIS YEAR?

INTERNATIONAL VISITORS

	ACTUAL VISITS IN 2012	
Park	Entrance fee	Days
South Luangwa	\$25	
Mosi-oa-tunya	\$10	
Lower Zambezi	\$25	
Kafue	\$20	

PLEASE NOTE THAT IN THE FOLLOWING HYPOTHETICAL SCENARIOS THERE WILL ONLY BE ONE PRICE CHANGE. PLEASE ALSO NOTE THAT THE ACCOMMODATION RATES, TRAVEL RATES, ETC WILL NOT BE CHANGING IN ALL SCENARIOS I.E. THE ONLY THING THAT MAY CHANGE IS ONE OF THE PARKS' ENTRANCE FEES.

- 20. SCENARIO 2:** GIVEN THE FOLLOWING ENTRANCE FEES AT EACH OF THESE FOUR PARKS: SLNP, MNP, LZNP & KNP, HOW MANY DAYS IN TOTAL WOULD YOU PLAN TO SPEND AT EACH OF THESE PARKS DURING THE 12 MONTH PERIOD, JANUARY TO DECEMBER THIS YEAR?

	ACTUAL VISITS IN 2012		HYPOTHETICAL 1	
Park	Entrance fee	Days	Entrance fee	Days
South Luangwa	\$25		\$50	
Mosi-oa-tunya	\$10		\$10	
Lower Zambezi	\$25		\$25	
Kafue	\$20		\$20	

- 21. SCENARIO 3:** GIVEN THE FOLLOWING ENTRANCE FEES AT EACH OF THESE FOUR PARKS: SLNP, MNP, LZNP & KNP, HOW MANY DAYS IN TOTAL WOULD YOU PLAN TO SPEND AT EACH OF THESE PARKS DURING THE 12 MONTH PERIOD, JANUARY TO DECEMBER THIS YEAR?

	ACTUAL VISITS IN 2012		HYPOTHETICAL 2	
Park	Entrance fee	Days	Entrance fee	Days
South Luangwa	\$25		\$25	
Mosi-oa-tunya	\$10		\$20	
Lower Zambezi	\$25		\$25	
Kafue	\$20		\$20	

- 22. SCENARIO 4:** GIVEN THE FOLLOWING ENTRANCE FEES AT EACH OF THESE FOUR PARKS: SLNP, MNP, LZNP & KNP, HOW MANY DAYS IN TOTAL WOULD YOU PLAN TO SPEND AT EACH OF THESE PARKS DURING THE 12 MONTH PERIOD, JANUARY TO DECEMBER THIS YEAR?

	ACTUAL VISITS IN 2012		HYPOTHETICAL 3	
Park	Entrance fee	Days	Entrance fee	Days
South Luangwa	\$25		\$25	
Mosi-oa-tunya	\$10		\$10	
Lower Zambezi	\$25		\$50	
Kafue	\$20		\$20	

- 23. SCENARIO 5:** GIVEN THE FOLLOWING ENTRANCE FEES AT EACH OF THESE FOUR PARKS: SLNP, MNP, LZNP & KNP, HOW MANY DAYS IN TOTAL WOULD YOU PLAN TO SPEND AT EACH OF THESE PARKS DURING THE 12 MONTH PERIOD, JANUARY TO DECEMBER THIS YEAR?

	ACTUAL VISITS IN 2012		HYPOTHETICAL 4	
Park	Entrance fee	Days	Entrance fee	Days
South Luangwa	\$25		\$25	
Mosi-oa-tunya	\$10		\$10	
Lower Zambezi	\$25		\$25	
Kafue	\$20		\$40	

24. THE CURRENT ENTRANCE FEE FOR THIS PARK IS US\$ AT WHAT AMOUNT WOULD YOU DECIDE NOT TO VISIT THIS PARK: US\$.....

25. IN YOUR VIEW, WHAT ENTRANCE FEE PER PERSON PER DAY DO YOU CONSIDER TO BE “APPROPRIATE” FOR INTERNATIONAL TOURISTS ENTERING THE FOLLOWING PARKS?

NAME OF PARK	APPROPRIATE ENTRANCE FEE
KAFUE NATIONAL PARK	US\$.....
MOSI-OA-TUNYA NATIONAL PARK	US\$.....
SOUTH LUANGWA NATIONAL PARK	US\$.....
LOWER ZAMBEZI NATIONAL PARK	US\$.....

26. FOR HOW MANY DAYS PER YEAR WOULD YOU VISIT EACH OF THE FOLLOWING PARKS IF THERE WERE NO ENTRANCE FEES?

NAME OF PARK	DAYS
KAFUE NATIONAL PARK	
MOSI-OA-TUNYA NATIONAL PARK	
SOUTH LUANGWA NATIONAL PARK	
LOWER ZAMBEZI NATIONAL PARK	

27. ENTRANCE FEES GENERATED BY THIS NATIONAL PARK FIRST GO INTO A COMMON CENTRAL POOL IN LUSAKA BEFORE BEING REDISTRIBUTED BACK TO THE NATIONAL PARK. IF IT WERE

POSSIBLE FOR THIS NATIONAL PARK TO SET UP A TRUST FUND DEDICATED TO CONSERVATION ONLY IN THIS NATIONAL PARK, WOULD YOU BE WILLING TO DONATE TO SUCH A TRUST FUND IN ADDITION TO THE ENTRANCE FEE YOU PAID?

YES	
-----	--

NO	
----	--

28. IF YES, HOW MUCH WOULD YOU BE WILLING TO DONATE TO THIS TRUST FUND FOR CONSERVATION IN THIS PARK: US\$.....

29. If YOU WOULD NOT DONATE, WHAT WOULD BE YOUR REASON (you may have more than one)?.....

.....

.....

30. ON A SCALE OF 1-5 (1=LOWEST AND 5=HIGHEST), WHAT IS YOUR RATING OF THE QUALITY AND STATE OF THIS PARK?

1	
---	--

2	
---	--

3	
---	--

4	
---	--

5	
---	--

31. IN YOUR OPINION, WHAT IMPROVEMENTS NEED TO BE DONE TO MAKE THE PARK MORE ATTRACTIVE? BE CLEAR AND CONCISE PLEASE.....

.....

.....

32. DO YOU HAVE ANY INTENTIONS TO VISIT THE PARK SOMETIME IN FUTURE?

YES		NO	
-----	--	----	--

33. WILL YOU RECOMMEND A FRIEND, LOVED ONE OR RELATIVE TO VISIT THIS PARK?

YES		NO	
-----	--	----	--

D. GENERAL INFORMATION ABOUT THE VISITOR

34. GENDER OF RESPONDENTS

Male	1
Female	2

35. NATIONALITY.....

36. HOW OLD ARE YOU?

Below 21 [] 21-29 [] 30-39 [] 40-49 [] 50-54 [] 55-65 [] Above 65 []

37. NUMBER OF MEMBERS IN THE HOUSEHOLD: _____ PEOPLE**38. WHAT IS YOUR EDUCATION LEVEL?**

Education level	tick the appropriate
Primary School	
Secondary/High School	
Tertiary/vocational	
University	
Other (specify)	

39. WHAT IS YOUR OCCUPATION?

Category	tick the appropriate
FORMAL EMPLOYMENT	
SELF EMPLOYED (OWN BUSINESS)	
UEMPLOYED	
STUDENT	
RETIRED	
other (Specify)	

40. WHAT WAS YOUR HOUSHOLD'S TOTAL GROSS INCOME (BEFORE TAXES) LAST YEAR?Income Amount? Currency? **THANK YOU VERY MUCH FOR YOUR PATIENCE AND COOPERATION****HAVE A GOOD TIME AT THE PARK!**